THE MAILING LIST

The Infantry School

MAILING LIST

A compilation of instructional matter prepared at The Infantry School and issued from time to time

Containing the Latest Thought on Infantry

VOLUME XX

Prepared by the Academic Department of the Infantry School under the supervision of the Assistant Commandant

DISTRIBUTED BY THE BOOK SHOP
THE INFANTRY SCHOOL, FORT BENNING, GEORGIA

14950—Benning, Ga., 3-4-40—7,000

JUL 12 1940

Property of U. S.

PREFACE

This volume of the Infantry School Mailing List contains material contributed by the following officers:

Lt. Colonel Harry M. Henderson, Infantry
Lt. Colonel William F. Heavey, Corps of Engineers
Major Sterling A. Wood, Infantry
Major Alonzo P. Fox, Infantry
Major Waine Archer, Infantry
Major James A. Lewis, Infantry
Major Leroy W. Yarborough, Infantry
Captain Jesmond D. Balmer, Field Artillery
Captain Whitfield P. Shepard, Infantry
Captain William H. Schildroth, Infantry
Captain Kenneth C. Strother, Infantry
The Military History Committee.

Major Sterling A. Wood, Infantry, assisted by Major Harry S. Wilbur, Infantry, and Captain William H. Schildroth, Infantry, edited this volume under the supervision of Lieutenant Colonel Henry P. Perrine, Infantry.

The drawings, map reproductions, printing, and binding are the work of the enlisted personnel of The Infantry School Reproduction Plant, supervised by Major James H. McDonough, Infantry.

Courtney H. Hodges,
Brigadier General, U. S. Army,
Assistant Commandant,
The Infantry School.

Always do a little more
than can reasonably
be expected of you.

TABLE OF CONTENTS

July 1940

Chapter		Page
1.	A History of the Infantry School	1
2.	Entrucking a Command	33
3.	Fighting an Infantry Rifle Company	59
4.	The Rifle Battalion in Attack	91
5.	Service Company in Defense	117
6.	A Military Reservoir	149
7.	It Takes Time to Dig In	159
8.	Field Artillery in Support of Infantry	177
9.	Loads of Infantry Motor Vehicles	217
10.	Notes on Infantry	261
11.	Infantry Weapons	275

CHAPTER 1

9Aug40KW

A History of The Infantry School

This chapter is an extracted portion of a manuscript entitled "A History of The Infantry School". The history was written in 1931 by First Lieutenant Leroy W. Yarborough in collaboration with Major Truman Smith and with the assistance of Major Charles A. Willoughby and Major Leven C. Allen. The history covers a full and complete account of the development of the Infantry School idea for the training of officers. It includes the details of the establishment of the Infantry School of Practice at Jefferson Barracks, 1826-1828; The School of Musketry, Presidio of Monterey, 1907-1912; The School of Musketry and The Infantry School of Arms at Fort Sill, 1912-1918; and The Infantry School at Fort Benning, 1919——.

INTRODUCTION

Diversity of Early Training of Infantry—Baron von Steuben Introduces New Training Methods—First Infantry Demonstration Unit—First American Infantry Drill Regulations—Infantry School of Practice, Jefferson Barracks, 1826-28—Service School Idea Gains Favor After Years of Struggle.

The history of The Infantry School, the story of its struggles during critical periods of its existence through which it survived despite disheartening conditions imposed upon it by indifference, neglect, lack of financial sustenance, factional hostility, and attacks of critics and assailants, is an epic in the history of American Infantry.

Though the imposing institution which we know to-day as The Infantry School is comparatively new, it is yet richly endowed in historical background for it is a product of evolution; the fruition of the advanced ideas of generations of progressive American infantrymen. As it exists to-day it surpasses, perhaps, in its magnitude, its scope of research and development, and its influence in molding the character of our infantry, anything ever conceived in the hopeful minds of our pioneers of infantry advancement. To-day it is the vital center of the infantry, of its progressive thought, of its doctrines, tactics, and methods. It is an important support in the structure of national defense, for infantry, the preponderant force of modern armies, remains, as always, the decisive power in battle and campaign. There is no extravagent praise bestowed upon The Infantry School when it is said that in its efficiency is a guarantee of national security, for the efficiency of our infantry will be that of our Infantry School.

Since its establishment as a permanent feature of the national defense system, and henceforward, the history of The Infantry School has been and will be inseparable from that of American infantry. A history of The Infantry School would be incomplete, however, if it failed to review to some extent the circumstances and influences which led ultimately to its founding as a permanent institution. Fully to view the historical career of The Infantry School, we must begin with American infantry of the Revolutionary War period and trace such of its developments and improvements in technic and tactical efficiency, and those of the infantry of subsequent years, as were due to progressive and outstanding infantry leaders of their respective times. We shall find that such changes came slowly; that only in recent years were made changes of instructional and tactical methods which were not the results of years of pleading and effort by a few far-seeing infantrymen. The early pioneers in the field of infantry progress were like the prophets without honor in their own land. Indeed, not only did these early advocates of progressiveness encounter skepticism, criticism, and even derision of their ideas, but

the proposals of those who followed them met the same uncordial reception which usually awaits the proponents of progress. Despite these discouragements the desire to improve the power and efficiency of the infantry persisted in the minds of the progressives, and as converts to the new schools of thought were gained, means eventually were found to develop and apply in practice the theories which they propounded.

That General Washington was fully aware of the deficiencies of his infantry is indicated by some of the early measures that he adopted in order to mold it into a more efficient fighting force. One of these was the acceptance of certain recommendations made by Baron von Steuben, a Prussian officer of experience and ability who had offered his services to the colonies, and whose efficiency was combined with rare energy, tact, and kindness. (1) Baron von Steuben found that there was no uniformity of drill, no similarity of organization and no teamwork of any kind in the army. No two companies drilled alike and all drilled badly. It is said that a spectator remarked on the occasion of a parade of an organization from his own state that it was the finest body of troops he had ever seen out of step. It was not long before the influence of von Steuben's efforts began to be seen. One of his first acts was to organize the officers into squads, sections, and companies under his personal direction. In this way he soon developed an excellent group of instructors. This very method of acquainting newly-commissioned officers with some of their duties was used during our preparation for and participation in the World War. With some modifications, it is still in use in certain of the courses at The Infantry School. The idea of organizing selected troops and using them for demonstration purposes also can be credited, so far as our service is concerned, to von Steuben, for it was he who induced General Washington to issue the order which provided for the addition to the guard of the commander-in-chief of certain selected soldiers "for the purpose of forming a

(1) Ganoe, History of U. S. Army, p. 54.

corps, to be instructed in the maneuvers necessary to be introduced into the army and to serve as a model for the execution of them". (2) To-day, a century and a half after von Steuben's time, we find his method again in use at The Infantry School where model troop organizations are maintained and employed to develop and to illustrate the technic and tactics of infantry.

Whimsical legislation which was enacted during the post-Revolutionary-War period quickly undid the excellent work of von Steuben and others who had brought order and efficiency out of chaos. (3) The infantry, in common with the remainder of the army, lacked unity and spirit. There was no inclination to produce officers or soldiers who were technically schooled for battle and campaign, and at the beginning of the War of 1812 the army was as heterogeneous and disorganized as when von Steuben began his work at Valley Forge. Only seventy-one cadets had been graduated from West Point whose curriculum at that time was of questionable value as a preparation for field service. (4)

The army at this time was not enjoying the fickle favor of the American public and it received scant sympathy in its desire to increase its efficiency. A little improvement in the infantry was made by its own efforts. In 1813 a *New System of Discipline*, based on French methods, was adopted in an endeavor to obtain uniformity in the training of infantry. (5) A new set of regulations for infantry was produced in 1815 by a board of officers composed of Generals Scott and Swift, and Colonels Fenwick, Cumming, and Dayton. This was the first work of this character to be prepared by a regularly constituted board of American officers. (6)

In the years that followed, the tiny army, dispersed in frontier garrisons and receiving little aid or encouragement, improved itself as best it could by its own efforts

(2) Ganoe, History of U. S. Army, p. 55.
(3) Ganoe, History of U. S. Army, pp. 90-91-92-95-96-113.
(4) Ganoe, History of U. S. Army, p. 116.
(5) Ganoe, History of U. S. Army, p. 126.
(6) Ganoe, History of U. S. Army, p. 143.

and meager resources. In 1826 Major General Edmund P. Gaines, after long and patient effort, induced the War Department to authorize the establishment of an infantry post at St. Louis for the purpose of organizing an "Infantry School of Instruction" to improve the efficiency of the infantry.* Here, in 1826, was founded Jefferson Barracks and the infantry's first school. The bulk of the infantry of our army was assembled here in 1826 and 1827. (7) Though the idea had been initially to train enlisted men, the plan was quickly expanded, and the principal function of The Infantry School of Instruction soon became to train infantry officers. The time, however, was unripe for such a venture, and the support given our puny army by the Congress was too meager to permit the new school to become firmly established. By 1828 the frontier wars with the Indians were claiming the attention of the garrison, and the regiments were dispersed one by one, to Minnesota, the Missouri Valley, and even the Maine frontier, to ward off the danger to the settlements. In the fall of 1828 the school had ceased to exist, and on November 24, 1828, it was officially closed, although in the report of the Secretary of War, the excellent work it had accomplished toward the training of our infantry was fully recognized. (8) However primitive may have been The Infantry School of Practice as viewed by modern standards, it was a long stride forward in the advancement of infantry training. It was the first concrete expression of the idea of a regular school to teach the technic and tactics of infantry. Though its existence was very brief its worth had been evident even to the skeptics, and the idea from which it grew persisted, althought it did not develop again into tangible form until more than three-quarters of a century later.. Here was the inception, however nebulous, of The Infantry School.

The next decades of our military history, filled with a constant succession of petty Indian wars and the Mexican

(7) Ganoe, History of U. S. Army, p. 166.
(8) Inf. Journal, Vol. XXIV, pp. 263-267.
* See G. O. 13, A. G. O. 1826.

adventure, did not permit the infantry to do much toward its own improvement. Units were too scattered and their energies too confined to the tasks immediately before them, to permit much thought to be devoted to the revival of the Jefferson Barracks experiment. Neither the years of the Civil War, nor the dark ages of the army immediately following, saw a revival of the school idea. Service schools were scorned as theoretical nonsense. Military science found almost its sole field for development in the troops themselves. Among the noteworthy works in this field was the preparation by Captain Heth, 10th Infantry, of the first system of target practice for the army. This was adopted by the War Department in 1858. (9)

A series of new publications, among them regulations for the infantry, appeared. *Rifle and Infantry Tactics* came out in 1860, and in 1861 another work, entitled *Infantry Tactics for the Instruction of The Infantry of the Line and Light Infantry Together with Bayonet Exercises*, was issued. In 1863, when it was found that infantry tactics were neither uniform nor adequate, the Secretary of War ordered the adoption of *Casey's Tactics*. A manual for military gymnastics appeared in 1866. The adoption in 1867 of *Upton's Tactics* was hailed as the greatest single advance in infantry training procedure since the regulations of von Steuben. Marksmanship began to receive greater attention, and in 1872 there appeared *Wingate's Manual of Rifle Practice*, the work of an officer of the New York National Guard. Seven years later (1879) the first complete systematic course of instruction in rifle firing was inaugurated. (10) New drill regulations which were issued by the War Department in 1891 were characterized as the product of the best minds in the service. Further improvements in drill regulations were made in 1896, (11) and in the same year a board of infantry officers produced a manual of firing regulations for the newly-adopted magazine rifle. (12)

(9) Small Arms Firing Regulations, 1906—W. D.
(10) Small Arms Firing Regulations 1906, W. D.
(11) Ganoe, History of U. S. Army, pp. 247-266-285-305-306-317-332-366-367-369.
(12) Small Arms Firing Regulations 1906, W. D.

In the meantime the military postgraduate-school-idea had been developing in foreign countries, notably in Germany and France, and America's response to this trend took form in the establishment at Fort Leavenworth in 1881 of the School of Application for Infantry and Cavalry, the present Command and Staff School. This school, at the start elementary in scope, gradually assumed a role equivalent to the staff colleges of European powers. It did not, however, fulfill the role of an infantry school. The establishment of Leavenworth was followed in 1892 by the Riley school for cavalry and field artillery, later to be split into the separate service schools of Riley for the cavalry, and Sill for the field artillery. (13)

Still nothing was done for the infantry, although both in the Spanish-American War and the Philippine Insurrection the dominant role again fell to that arm. By the commencement of the twentieth century, the idea of the service schools had taken root in the United States Army. The knowledge of the use of the cavalry and artillery arms was making rapid progress, and the esprit of both had become the envy of the infantry. Yet the largest and most important of all our arms of the service had no school, and remained in its tactical development still under the shadow of the experiences of the Spanish-American War and the Philippine Insurrection. Perfection in close order drill, individual marksmanship, the mechanical deployment and advance of linear skirmish lines, and a smattering knowledge of patrolling, were the criteria of good infantry. The machine gun, which had already proved its worth in the Franco-Prussian War, was, to the American infantry, still a visionary weapon of the future. Every cavalry and artillery officer felt himself equal to commanding infantry in battle, but guarded the technic of his own branch as a secret which the infantry mind could not, if it would, penetrate.

There is little wonder that the esprit of the infantry was somewhat lower than that of its sister arms. And

(13) Ganoe, History of U. S. Army, pp. 355-356.

there is also little question but that the knowledge of infantry tactics was markedly deficient among its own officers. (14)

Yet for years there had been voices crying in protest against this apathy, endeavoring to rouse an infantry consciousness, and pleading for the establishment of an infantry school. Not until the year 1907 was the first step taken which led to the foundation of The Infantry School of today, and later brought about the creation of Fort Benning.

THE SCHOOL OF MUSKETRY

PRESIDIO OF MONTEREY, CALIFORNIA

1907-12

Organization—School Troops—First Commander and Staff—Plans for Course of Study—First Student Body—Early Experiments—General Review of Accomplishments—Some Characters of the Early Period.

For nearly eighty years after the infantry's first school experiment in 1827 and 1828 at Jefferson Barracks, Missouri, the pleas of the few persons who perceived the need of a permanent central school for the infantry had been in vain. Latterly in the nineteenth century, and in the early years of the twentieth, the views of some of the officers who were advocating such an establishment were expressed from time to time in service journals. Their recommendations, and those of others who were in favor of such an enterprise, fell on deaf ears and made little impression on the army as a whole or, indeed, upon the infantry itself. The attitude of the majority of the army seemingly was a reflection of the traditional vainglory of the American Public in regard to national prowess with

(14) Inf. Journal, Vol. X, pp. 908-913.

the rifle and the natural superiority of American marksmen over those of foreign countries. Accordingly, the development of skillful individual marksmanship predominated in the training of the American infantryman. Until shortly after the Spanish-American War, improvement in infantry marksmanship had progressed steadily, but gradually there came a general falling off in skill with the rifle.

The decline of rifle marksmanship standards in the Pacific Division, which comprised, in the Departments of California and the Columbia, all troops in the states of California, Oregon, and Washington, though probably not more evident than that in the remainder of the army, became a matter of deep concern with Lieutenant General Arthur MacArthur, the division commander. "Target practice was in a bad way," says General Frank L. Winn, who then, as a captain, was aide-de-camp to General MacArthur, and inspector of small arms practice of the Pacific Division. "There were no target ranges. The fine individual marksmanship, for which the army was famous prior to the Spanish-American War, was in danger of being lost to the service." (1) Captain Winn was given the task of locating new target ranges and improving existing ones, and then of finding instructors for the intensive course of marksmanship which General MacArthur proposed to inaugurate. "From this idea," says General Winn, "the plan developed into a school of experiment and theory in the use of the rifle in battle and of improvement, by testing, in the rifle itself." (2) After making a study of the project, Captain Winn prepared a memorandum outlining the features and organization of the proposed school, and this, after General MacArthur had obtained the approval of the War Department, became the basis of General Orders No. 4, Pacific Division, February 21, 1907, which formally established the School of Musketry, Pacific Division, at the Presidio of Monterey, California. (3)

(1) Winn (Major George W. McIver)
(2) Gen. Winn (McIver)
(3) McIver

Although the immediate intention in establishing the School of Musketry was to raise the marksmanship standards of the Pacific Division by giving to "selected officers and enlisted men a higher degree of practical and theoretical instruction in the use of small arms than it is practicable to obtain at posts, with a view to making them better instructors and thereby increasing the fire efficiency of the organizations to which they belong," (4) there is little doubt that the vision of General MacArthur and his advisers extended into the future farther than did that of most of their contemporaries. "General MacArthur was a great believer in the infantryman and his rifle; his order was in advance of the times," says General Winn. (5) That General MacArthur recognized the importance of the infantry's keeping abreast of the development of firearms is evident in a portion of his order in which he says, "the progressive development of mechanical skill has operated to produce such perfection in firearms that dexterity in the use of ballistic weapons has become the main element of battle. In other words, superiority of fire is now the first tactical principle, without which an army in the field may fail to accomplish decisive results even when inspired by energy and courage, directed with ability and supported by the enthusiasm of the entire nation." (6) The tactical possibilities of controlled collective rifle fire had been foreseen by only a few, and although high-powered, small-caliber rifles of extreme precision had been in the hands of the infantry for several years, neither the limitations nor capabilities of these weapons, nor their influence on the evolution of infantry tactics, were thoroughly understood. Into this unknown field of military art General MacArthur intended to explore, for further in his order he states, "In the evolution of the school the scope of the work may take a wider range and include all subjects connected with small arms, ammunition and tactics." (7) Although the school was to concern itself only with matters relating to

(4) G. O. 4, Pacific Div., 21 Feb. 1907.
(5) Extract Letter Gen. F. L. Winn (McIver).
(6) G. O. 4, Pacific Div., 21 Feb. 1907.
(7) G. O. 4, Pacific Div., 21 Feb. 1907.

small arms, the benefits of its instruction and researches were not to be confined to the infantry alone, but were to be shared by all troops in the division whose armament included small-caliber weapons. (8)

As an instructional unit, the School of Musketry was to be autonomous within certain limitations, but as its personnel formed an integral part of the garrison, its administration, defined by special instructions from headquarters of the division, was delegated to the post commander of the Presidio of Monterey. The school staff was to consist of an officer in charge and an assistant instructor, the latter to act also as secretary of the school. The other permanent personnel was to consist of one company of infantry from each of the two departments of the division, and a machine-gun platoon. The student body, which was to be renewed quarterly, was to include two officers from each regiment of infantry, cavalry, and field artillery, within the division; one enlisted man from each company, troop, and battery; and such additional officers and enlisted men as were selected by the division commander. (9) The school staff and troops and the student officers were specifically exempted from performing any of the routine post or staff duties. (10)

A portion of the post, including all barracks and officers' quarters, which was then occupied by the 2d Squadron 14th Cavalry, was assigned to the school. The squadron vacated the area on March 20th and departed on its march to San Francisco. Company E 14th Infantry, and the machine-gun platoon and Company C of the 22d Infantry, which had been selected as school troops, were transported by rail and arrived at Monterey about March 25th. (11)

Lieutenant Colonel Joseph Garrard, 14th Cavalry, was designated as the officer in charge and principal instructor of the School of Musketry, and Captain Frederick G. Stritzinger, Jr., 22d Infantry, as assistant instructor and secretary of the new school. They were directed to prepare

(8) G. O. 4, Pacific Div., 21 Feb. 1907.
(9) G. O. 4, Pacific Div., 21 Feb. 1907.
(10) G. O. 4, Pacific Div., 21 Feb. 1907.
(11) G. O. 5, Pacific Div., 6 March 1907.

programs of instruction and to have everything in readiness for the opening of the school on April 1st, 1907. (12)

The curriculum, (13) an ambitious one for those days, comprised extensive courses for both the practical use and theoretical study of the rifle, revolver, and machine gun. The practical courses for the rifle and revolver began with firing of all classes and at all ranges then prescribed by regulations. A considerable amount of experimental firing, which was made an important feature of the course, followed. This later was for the purpose of developing courses in field firing and suitable targets for them. Very liberal ammunition allowances, as compared with those of recent times, were made for the two weapons. One thousand rifle cartridges and 500 pistol cartridges, with additional ammunition as recommended, were allowed during a school term for each officer and enlisted man who fired these weapons. The theoretical course covered a wide range of subjects and included, among others, a thorough study of the existing small-arms firing regulations; the mechanism and fabrication of small arms; a study of small-arms ballistics and their relation to tactics; fire control and discipline; supply of ammunition in battle; and a limited study of the small arms of foreign armies. Lectures and recitations from approved text books supplemented this course.

A special course for machine guns, in which all students were obliged to participate, was devised. Like the other courses, it included both practical and theoretical work, and had appropriate ammunition allowances. (14)

The school opened as planned on April 1st, 1907. The work began with the marksmanship courses which were fired on the post target range not far from the school area. As General MacArthur's order had particularly emphasized the importance of target practice in the training of the individual, this phase of the instruction was executed with an unprecedented attention to detail, and every effort

(12) G. O. 5, Pacific Div., 6 March 1907.
(13) G. O. 4, Pacific Div., 21 Feb. 1907.
(14) G. O. 4, Pacific Div., 21 Feb. 1907.

was exerted to develop each student to his maximum capacity as a marksman and an instructor as well. The now familiar coach-and-pupil method of instruction, (15) unique in those days, was adopted, and its use was attended with such success that it has since become one of the basic principles of our marksmanship training. Following the rifle and revolver instruction came the machine-gun course. This included a study of the nomenclature, functioning, and firing of the newly-purchased Vickers-Maxim gun, and the nomenclature and use of the pack outfit by which it was transported. The latter part of each school session was devoted to the newly-devised field-firing exercises. For this class of firing the only suitable terrain was several miles from the post and it was customary for the students and school personnel to camp near the site during the five to ten days that it was in progress. Several sites were used in the early days of the school but eventually all of the field firing took place on a rugged tract of land, thickly covered with brush and scrub oak, known as "Jack's" or "Gigling's", about eight miles from the Presidio of Monterey. This tract, or a portion of it, was later acquired by the government and is now known as the Gigling Reservation. In these field-firing exercises, tactics and fire were combined for the first time in a regularly prescribed course. Though they were elementary and incomplete at first, their training value was at once evident and their development was so rapid that they were made the subject of a special report in October, 1907. (16) Later they were to be incorporated into small arms firing regulations.

Three months after its opening, the status of the School of Musketry was changed to that of a department school, when the Pacific Division was discontinued and General MacArthur was transferred elsewhere by a War Department order of June 30th, 1907. New instructions issued at that time restricted attendance at the school to members of regiments serving in the Departments of California, including the Hawaiian Islands. These instructions were

(15) McIver.
(16) McIver.

later modified to the extent of permitting organizations, armed with the rifle, of the Department of the Columbia, exclusive of Alaska, to send the usual number of students to the school. (17)

On October 31st, 1907, another important change took place when Colonel Garrard was relieved from command of the school, at his own request, and Major George W. McIver, 20th Infantry, was appointed commandant. (18)

The first of numerous changes of school troops and other personnel in 1908, took place on January 5th, when Company E 14th Infantry was relieved and was replaced by Company L 22d Infantry. On June 1st Companies C and L and the machine-gun platoon 22d Infantry were relieved when their regiment was transferred to Alaska. Companies C and D 8th Infantry were then assigned to the school to replace the two rifle companies, but the machine-gun platoon was not replaced until early in 1909. Captain Stritzinger, assistant instructor and secretary, was relieved by Captain James N. Pickering, 1st Infantry. (19)

The year 1908 was one of notable accomplishments for the school. In January a change in school regulations was made which required all students to fire the revolver course. (20) Beyond the natural evolution and development, little change of the curriculum was made. But research, experiments, and the compilation and publication of their results proceeded at a busy rate. The machine gun, new to the American army, was receiving a great deal of attention. The need for a suitable infantry machine-gun organization, a machine-gun doctrine, and text books on the subject, was felt. In January 1908, Captain John H. Parker, 28th Infantry, was assigned to duty at the Presidio of Monterey to devise an infantry machine-gun organization, and to write a set of provisional regulations for all machine-gun units. (21) 1st Lieutenant Thomas W. Brown, 27th Infantry, and 2d Lieutenant Leighton W. Powell, 13th Infantry, were assigned as his assistants. The

(17) McIver.
(18) S. O. 198, Dept. Cal., Sept. 10, 1907.
(19) McIver.
(20) McIver.
(21) S. O. 7, W. D. 9 Jan. 1908.

three officers were assigned to Company A 20th Infantry, which was converted into a provisional machine-gun company. (22) Although the project was not assigned to the School of Musketry, the school shared in its development, and the commandant of the school was a member of the board of officers which passed on the results of the experiments. This work, begun by Captain Parker in February 1908, required a year for completion, but by June 1908, it had progressed so far that a provisional machine-gun firing manual was published. (23) Captain Parker, who was known as "Gatling-Gun Parker", had gained some distinction as a junior officer in command of a Gatling-gun platoon at San Juan Hill, and his detail on the machine-gun development project had been made at the suggestion of President Roosevelt. (24) He was reputed to be one of the foremost of early authorities on the machine-gun and many of his predictions concerning the use of that weapon were verified in the World War. (25)

In May 1908, a revision of the Small Arms Firing Manual was begun by a board of officers composed of Major G. W. McIver, 20th Infantry, Major W. M. Wright, 8th Infantry, Captain J. McI. Carter, 14th Cavalry, and Captain F. G. Stritzinger, 22d Infantry. The result of their work was published in the following year under the title "Provisional Small Arms Firing Manual 1909". (26)

Early in the third year of the school's existence the machine-gun work was given an impetus by the arrival of the machine-gun platoons of the 8th and 20th Infantry regiments on January 9th, 1909. In March came another machine-gun unit from the Department of the Columbia. This was the provisional machine-gun troop of the 14th Cavalry. It was an experimental unit which had been organized for the purpose of determining the proper organization, drill, and equipment for cavalry machine-gun units. It was a valuable acquisition to the school and

(22) Hitt; McIver.
(23) G. O. 102, W. D. 18 June 1908.
(24) Parker; McIver.
(25) McIver.
(26) McIver.

its experience after a year of experimental work with the Vickers-Maxim gun formed the basis of a report on this subject to the War Department. (27)

In May 1909, the commandant proposed a new scheme of instruction for machine-gun units.

Under this plan, a special school was held from August 14th to September 14th, which was attended by the platoon commander, one sergeant, two corporals, and three privates from each of the four machine-gun platoons in the department. The school was highly successful and was repeated in the following year with augmented personnel and equipment. (28)

In June the machine-gun platoon of the 20th Infantry was relieved and departed for the Philippines. Revision of the provisional machine-gun regulations which had been drawn up by Captain Parker and his assistants in the preceding year was completed by the school and the revised regulations were published in War Department orders on June 29th. (29)

In July, by direction of the War Department, a series of tests was begun to determine the relative efficiency of rifle fire and machine-gun fire; to determine the equivalent of one machine gun in terms of riflemen. The results of prolonged trials were indeterminate. (30)

Another change of school personnel took place in August when Companies K and L of the 30th Infantry relieved the two companies of the 8th Infantry. (31)

On September 30th, a firing demonstration took place at Gigling's for the benefit of visiting National Guard Association delegates. In this exercise, which illustrated the cooperation of machine guns with a battalion in attack, some startlingly new methods were demonstrated. One of these was the use of overhead machine-gun fire to assist the attacking troops. Tests, by firing over silhouette targets, previously had indicated that there was a sufficient

(27) McIver.
(28) McIver.
(29) G. O. 130 W. D. 1909.
(30) McIver.
(31) McIver.

margin of safety for this class of supporting fire. (32) It was a bold exploit, however, and it made a strong impression upon the spectators.

Little beyond the usual routine took place during the remainder of the year. Classes for 1909 averaged in attendance about eight officers and seventy-five enlisted men. (33)

The request of the War Department on January 25, 1910, for a draft of a set of regulations for the Musketry School in view of a proposal to transfer the school to Fort Sill, Oklahoma, (34) was not the first intimation that a change in its character to that of a national school was being considered. Twice in annual reports of department commanders, once by General Frederick Funston, (35) and again by General John F. Weston, (36) the School of Musketry had been highly commended, and its removal to a central location in the United States in order to place its benefits within reach of all the army had been recommended. A third similar recommendation by General Thomas H. Barry was made in June, 1910. (37) Begun as a department school of comparatively limited sphere of influence, its work was of such high order and had attracted so much attention in the army that the movement to make it a central army school had gained considerable headway and had a number of influential supporters.

In the spring of 1910 the noted firearms inventor, John M. Browning, spent several weeks at the school during the tests of the Colt's automatic pistol, which he had improved, and which was later adopted by the army. He was much interested in the Vickers-Maxim gun and remarked that he would some day build one like it. (38) In this same year, an officer of the California National Guard attended a complete course at the Musketry School at his own expense, an incident of no little significance, for this was long before the "one-army" idea. (39)

(32) McIver; Twyman.
(33) Short's report; Twyman.
(34) McIver.
(35) (36) Annual Reports Dept. Calif. 1908-p. 166, 1909-p. 131, 1910-p. 140.
(37) Annual Reports Dept. Calif. 1908-09-10.
(38) McIver.
(39) McIver.

In August a board of officers composed of Major McIver, 9th Infantry, Captain Merch B. Stewart, 8th Infantry, and First Lieutenant William H. Clopton, 13th Cavalry, was convened to consider and report upon equipment for battalion and combat trains, and matters concerning ammunition supply. After a test of an ammunition cart designed by one of its members, the board decided that the army escort wagon was the proper vehicle for such purposes. (40)

In September Major McIver was ordered to Fort Sill, Oklahoma, for the purpose of reporting upon its suitability as a location for the School of Musketry in its proposed new role as an army school. At the same time an inquiry came from Major John F. Morrison, then head of the department of tactics at the Army School of the Line, Fort Leavenworth, Kansas, for an expression of opinion on the proposal to associate the two schools in some way. (41)

From October 15th to December 31st classes were suspended in order to permit the school officials to complete tests and reports on the great number of appliances and inventions which had been referred to them. (42)

One of the most significant indications of the progressiveness of the school was its quick perception of the airplane as a menace to infantry. This resulted in a series of test firings in 1911, with rifles and machine guns at box kites representing airplanes. (43) In the summer of this year an important extension of the scope of the school was made when its permanent personnel was ordered to Atascadero for temporary duty at the national guard encampment. This was the school's first official contact with the state forces and it resulted in the organization of a special class for national guard officers in the following year. (44)

On July 1, 1911, Lieutenant Colonel Samuel W. Miller, 25th Infantry, succeeded Major McIver in command of the school. (45) In September the former commandant, who,

(40) McIver.
(41) McIver.
(42) McIver.
(43) Letter Col. S. W. Miller, 7 Oct. 1911, Inf. Sch. Lib. Saunders.
(44) Saunders.
(45) McIver; Chamberlain.

in the meantime, had been promoted to lieutenant colonel, headed a board of officers whose task was to make a revision of the firing regulations. This they completed late in the year. The other members of the board were Captain Aubry Lippincott, 13th Cavalry and 1st Lieutenant George C. Shaw, 27th Infantry. (46) Their recommendation that soldiers be trained to fire at the rate of ten shots a minute met with a curious reception at the War Department where it was termed "absurd" and "freakish." (47)

At various times in 1911 and 1912 Colonel Miller made inspection trips in search of a suitable location for the Musketry School when it should be expanded as a national institution. (48) Colonel Miller strongly favored Whipple Barracks, Arizona, as a site. (49) The War Department had tentatively selected Fort Sill as the permanent location of the school, principally because of its central geographical location, and also because the artillery school of fire was there. (50) At Fort Sill there was a shortage of housing facilities, (51) and the suggestion was made that Whipple Barracks be utilized temporarily until the crowded condition at Fort Sill could be relieved. Before this plan could be placed into effect, the congestion at Fort Sill was relieved sufficiently to make possible the transfer of the school to that place. The order for the discontinuance of the School of Musketry at the Presidio of Monterey and the transfer of its personnel, equipment and records to Fort Sill was issued on December 19, 1912. Colonel Miller inaugurated the movement in January 1913. (52)

The preceding paragraphs present a brief chronological account of the career of the School of Musketry during its existence of nearly six years at the Presidio of Monterey. The view thus depicted of the school and its characters, of its works and its methods, of its developments and its contributions to the advancement of our infantry, is a general

(46) S. O. 201, W. D. 1911.
(47) McIver.
(48) Chamberlain.
(49) Annual Report Western Div. 1912, p. 72.
(50) Annual Report Western Div. p. 72.
(51) Annual Report Dept. Calif. 1912.
(52) Annual Report Western Dept. 1913, Chamberlain p. 17.

one, and may be likened to a distant panorama or picture which the spectator sees clearly, but of which he cannot discern the separate features. If, then, he desires to examine the details of the picture, if he wishes to regard the more intimate scenes of this period which began a new era of progress for the infantry, he must draw closer.

From the beginning, its accomplishments were conspicuously excellent, and soon the school had gained a favorable reputation, not only in its own department; but throughout the army as well.

A progressive infantry officer of that time, a colonel on the general staff, said in the course of an article in a service magazine: "The organization of this school is the most hopeful sign of a practical awakening that we have given in years. * * * We ought to look at facts squarely in the face. 'Know thyself' was the Greek estimation of the summit of wisdom. It is wrong to deceive others; to deceive ourselves concerning matters of vital importance is both stupid and criminal. Here we are—we are prepared to, and probably can shoot the best match in the world, in school or parlor shooting at bull's-eye targets and known distances, but in everything that concerns the practical instruction and training of our infantry for shooting under service (battle) conditions, we have been asleep on the trail of military progress for twenty years, while our neighbors have been as busy as hunting dogs on the first day of the open season." (53) This writer was one of the early advocates of a national school of musketry which he recommended be established at Fort Sill and modeled after the general lines of the French school at Chalons. (54)

Despite the revolutionary nature of the methods and doctrines developed at the school, they soon were generally accepted by the army, and in some quarters, were regarded with impressive gravity. This was particularly true in the Philippine Division, where an officer was tried by court-martial on an accusation of disclosing the contents of papers prepared at the School of Musketry in 1909, which described the courses and the methods of computing the

(53) (54) Evans Inf. Jour. May, 1909.

standard of efficiency in small-arms firing, "well knowing that said courses had been adopted for the proficiency test in the Philippine Division and that same were of a confidential nature". (55)

One of the school's first objectives was to raise the standards of marksmanship of the troops in the division. The effects of its influence were noticeable almost at once in the growth of interest in shooting in all units. In the Department of California there was an increase of seventeen percent in the standard of firing proficiency in the target year following the establishment of the school. "It is further significant," says General Thomas H. Barry in one of his annual reports as commander of the Department of California, "That regiments most closely associated with this school are among the leaders, and this department has stood first in target practice for the two years, 1908 and 1909." (56) In the course of the progress and evolution of the school the subject of target practice, though regarded to be no less important in the training of the individual, was overshadowed by extension of research into other classes of firing and eventually it was omitted from the curriculum of the school. (57)

One of the tasks assigned to the school was the development of a system of field firing. The problem was not an easy one, for before the establishment of the Musketry School, the army had made no real study of fire tactics and the only sources of information on the subject were foreign. The old collective fire exercises which had little or no relation to tactics, and were a feature of target training were purely formal exercises at known distances. Phenomenally high scores, frequently aided by ingenious methods of counting, were sometimes made. (58) In the field-firing methods devised by the school, tactics and fire were combined in appropriate problems which tested the skill and leadership of all fire-unit commanders as well as

(56) Annual Report Dept. Calif. 1910, p. 140.
(57) Pickering.
(58) McIver.
(55) G. O. 30, W. D. 1912.

the marksmanship and discipline of the riflemen. Principles for field firing were evolved, and a great deal of valuable ballistic data, including tables of probabilities of hits, and lateral and vertical dispersions, had been compiled as a result of extensive experiments and research. (59) Enthusiasm and interest in the work was high. Everybody worked hard, particularly the secretary. He says: "A great deal of the dope I developed at this school was incorporated in the firing regulations—I being secretary of the board* * * there was no one to make the drawings and I had to make them myself in addition to the regular school work. I think I was working about eighteen hours a day during those weeks. I had such complete ignorance of the printing art as to illustrations that I made all the drawings the size needed for the firing regulations, not knowing they could be reduced by the printer." (60)

"What an opportunity for a young man!" exclaims a retired colonel in reminiscence of his experiences as a lieutenant in command of a provisional machine-gun platoon at the School of Musketry in 1907 and 1908. "The assignment * * * meant a freedom of action for a subordinate commander which is inconceivable under present conditions." The machine-gun platoon then consisted of two squads of a corporal and nine men each, and one sergeant, and was commanded by a lieutenant. The platoon had two British Vickers-Maxim guns, each of which, with tripod, weighed about 110 pounds, and with tools, water, and ammunition; the weight was about 800 pounds per gun. Guns, ammunition, and accessories, were carried on ten pack mules whose pack equipment was designed for horses. The ammunition allowance was 500 rounds per gun a year. "The machine gun was a curiosity to the classes at the school," continues the colonel. "I felt at Monterey, after a few months, that no one knew more about machine guns than I did. There was no theory of machine guns in those days that had been put into print. The 'training manuals' consisted of a single copy of a book by the Vickers-Maxim

(59) McIver.
(60) Stritzinger.

Company on the assembly and operation of the gun. Any idea suggested by my men or by the school was tested out with ammunition expenditure (if necessary) that wiped out the annual allowance in a few minutes. Indirect fire, night firing, new improvised apparatus, were all played with." (61) Dissension over the new weapons was rife. Machine guns were termed "complicated engines" exploited by youthful cranks who expected them to dominate the battlefield of the future. Upon one occasion, the colonel relates, an argument over the respective merits of the Maxim and the Gatling guns resulted in a firing match in which a third gun, the Benet-Mercier,* participated for good measure. Each gun fired 100 rounds at an A-target 200 yards distant. The Maxims put every shot in the "four-ring", the Benet-Merciers put every shot in the target, and the two Gatlings, on artillery mounts and operated under the "extremely personal supervision" of "Gatling Gun Parker", according to the colonel, failed to account for fifty of the two hundred shots they fired. (62)

During the year that this officer was in command of the machine-gun platoon he expended about 40,000 rounds of ammunition with his two guns in numerous tests and experiments. Recommendations which came as a result of this firing were placed in effect some ten years later at Fort Sill. This officer also devised the steam tube, now universally used, and applied it to the Maxim gun. The Benet-Mercier air-cooled gun was adopted shortly afterward and the steam-tube device did not come into use in our army until 1918 when the Browning gun was adopted.

In tactical tests, indirect machine-gun fire was employed against targets on reverse slopes, "canopy fire" was delivered over the heads of "living infantry", and aerial fire at kites representing airplanes was tried. These tests, together with some of the views of machine-gun enthusiasts, were considered "wild" and "absolutely nutty" by certain conservatives. (63)

---

(61) Hitt.
* Also spelled Benet-Mercie and colloquially termed "Benny".
(62) Hitt.
(63) Twyman.

There is little doubt that these early experiments with heavy machine guns were of great value in accelerating the training of machine-gunners during the World War, for as has been mentioned previously, the Benet-Mercier gun, which was hardly more than an automatic rifle and held little favor in the army, was nevertheless the army's official machine gun for several years prior to our entering the war.

Despite the extensive data which the school accumulated on the machine gun during its research and experiments of several years, the existence of this formidable weapon was first recognized by Field Service Regulations in 1914, but the recognition extended only to its use as an emergency weapon to be used for a few minutes, at most, during critical or especially favorable periods of combat. (64)

Although experimentation in matters relating to all materials pertaining to small-arms firing was authorized when the School of Musketry was founded, it is improbable that its sponsors could have anticipated the deluge of applications for tests of various arms, appliances and inventions which descended upon the school in such quantities that classes had to be suspended during an entire quarter in 1910 in order to allow the overworked school personnel to clear up incomplete work of that character. (65) There were tests of everything from cans for target paste, to pistols, machine guns and grenades, says a former secretary of the school. (66) "The first models of the Colt pistol were tested there, and I found a way to make the pistol go off by juggling the safeties alone, without touching the trigger," says another officer. "Colonel Marion P. Maus, president of the testing board, was incredulous and on trying it for himself the gun went off and the bullet chipped a neat nick in the toe of his boot." The same officer relates that he took readings for a week on a transit and on thermometers and hygrometers in an endeavor to find a law for mirage. (67) A partial list of articles tested

(64) Field Service Reg. 1914, W. D.
(65) McIver.
(66) Pickering.
(67) Hitt.

by the school during only a portion of its career at Monterey comprises rifle sights, targets, telemeters, rifle tests, safety devices for rifles, prism range finders, Colt and Savage automatic pistols, subtarget-gun machine, Benet-Mercier gun, pack outfits, Maxim silencer, vertical-fire controller, cooling device for machine guns, Hopkins and Allen revolver, automatic target, and field glasses. The Ordnance Department soon accepted the school as an agency through which it could obtain the views of the line on new devices and materials. In addition to annual allowance of $15,000 for ammunition the school received small sums from time to time to assist in carrying out tests. (68) One of the products of the school's experiments was a type of target for field firing. Credit for the origin of the design was claimed by two officers but credit for its production in practical form is conceded to Lieutenant, later Lieutenant Colonel, A. E. Ahrends. (69) The constant succession of tests and experiments led to the creation of a board of experiment, composed of student officers. This was the genesis of the present Department of Experiment of The Infantry School. (70)

As in other phases of the Musketry School's activities, in the matter of instructional methods the founders had little or no precedent to guide them. Undoubtedly the basis of their methods was a broad, flexible combination of theory, practice, and common sense, which allowed for expansion and evolution as needed in the development and presentation of the comprehensive curriculum with which the school opened. Naturally the impressions of the students differed in some respects, but none has expressed any opinion which it not an endorsement of the conduct of the courses and a tribute to the pioneering of the school. "My memories of the School of Musketry at the Presidio of Monterey are very agreeable," writes an officer of the general staff who attended the school as a lieutenant. "In the arms course each student was given two or more foreign weapons and required to familiarize himself thoroughly with these

(68) McIver.
(69) Stritzinger; Hitt.
(70) Howard.

weapons, being able to dismantle and assemble them and name the parts. This work he was called upon to do in the presence of the class and give a little lecture to the class at the same time. * * * * Every bit of instruction was given in a most thorough manner," he says, and expresses his belief that every student who completed the courses was thoroughly grounded in their subjects. (71) "I had never seen target practice so thoroughly prepared and carried out as it was in the School of Musketry," writes a lieutenant colonel of the active list. (72)

That thoroughness in methods of presentation was a definitely prescribed policy of the school is confirmed in a statement of a former commandant who says, "No one in the preliminary practice was left to himself, each being attended and aided by a coach or some one acting as such." (73) This arrangement, now an accepted practice but new in those days, sometimes created an incongruous situation in which an unqualified man would be trying to coach a gold-medal shooter. (74) The new methods were immediately productive of remarkable results and of them a major of ordnance writes, "I think that the School of Musketry was the best thing of its kind ever organized for making real gunmen and developing the best methods of teaching men in the art of marksmanship." (75) These views are endorsed by a former student, later an officer of the general staff. (76)

The impressions of an infantry colonel who observed the work of the school during its encampment in June 1908 are related in part as follows: "Although the writer had had more than a third of a century of service as a commissioned officer of the army, had always been deeply interested in and conversant with target practice, the work performed by the members of this school was to a great degree a revelation; it was most excellent and of inestimable value in training both officers and soldiers for actual

(71) Saunders.
(72) Howard.
(73) McIver.
(74) Pickering.
(75) Sears.
(76) Brush.

combat. Every exercise represented an episode or fraction of a combat, in which, for those taking part, there was an element of surprise or uncertainty. All movements were required to be executed with regularity by tactical commands and means, and this was followed out, except in a few instances in which commanders of squads became excited or confused. All formations were in extended order." (77)

An officer, who, in 1912, had been assigned to the school as an instructor after completion of a term as a student, gives an interesting account of some of the features of the work.

His first assignment was as instructor in probabilities. One of the problems was this: A company of so many rifles (average marksmen) is shooting for a certain time and at a certain rate of fire at a target of so many silhouettes spaced so many feet apart at such and such a range with an error in estimation of so many yards short or over. Find the probable number of hits to be expected. "The students considered this a pretty 'mathy' course," he says, "and particularly one old captain of cavalry (40 years plus) whom I found dividing by 100 in long division." To lessen any sense of monotony or dullness which might have arisen from their intensive application to their studies, an occasional touch of humor, inserted into the schedule by official sanction, enlightened the students' work. An amusing account of a problem of this character is related by this former instructor who says: "The student officer is in command of a small patrol marching in single file through a Philippine jungle in hostile territory. The officer is at the head of the patrol, and is suddenly ambushed by about five natives concealed behind trees and bushes. He proceeds to shoot them up with his '.38'. The last attacker (a highly painted, standing silhouette, armed with a bolo, and attached by pulley to an overhead wire) rushes at the officer from an unexpected direction and,

(77) Duncan, Inf. Jour. Jan. 1909.

needless to say, the officer generally loses the decision." (78)

After field firing, students were required to compute statistics which comprised calculations of ballistic data in connection with the problems, considering such subjects as cones of fire, dispersions and probabilities of hits to be expected. (79) Officers were frequently required to prepare papers on selected or assigned professional subjects. In 1912 a student who later became a general staff officer, was assigned the subject of "The Use of Airplanes in Observing Fire." "As there was no one present who had ever been in an airplane," he relates, "I stretched my imagination to the limit." (80) What appears to have been an application of a shrewd bit of psychology in the instruction of the enlisted students is disclosed in the statement of a former secretary and assistant instructor. "Enlisted men had no use for pen or pencil," he says. "The fact that we had no examinations plainly told them that we did not care especially whether they learned anything or not, and thus we secured a surprising amount of interest and close attention." (81)

The high standards sought by the school and the energetic example of endeavor of its personnel were instrumental, no doubt, in creating the high spirit which animated the student bodies. Of this latter a brief but eloquent description is given by a retired colonel, a former instructor at the school, who says, "A white heat of enthusiasm permeated every class and practically every member of every class. No urging of laggards was necessary." (82)

And of the men of those pioneer school days what shall be said? To attempt to describe the personalities of all who were associated with the enterprise would be futile, yet this chapter would be woefully incomplete if it failed to include the brief but vivid descriptions by surviving contemporaries of some of the conspicuous figures of the

(78) Sears.
(79) McIver.
(80) Underwood.
(81) Pickering.
(82) Twyman.

school's early period. Although these sketches differ slightly in their estimates of certain individuals there is a convincing unanimity in their evaluation of the personal attributes of Major George W. McIver, who was commandant of the school from October 31, 1907 to July 1st, 1911. "As to personalities, I know of none more outstanding than that of the commandant of the time, Major McIver," writes a retired colonel who then was a lieutenant and an instructor at the school. "Of Scotch descent, he was cautious, conscientious, miserly of speech, warm of heart, and deliberate to a point approaching the Nth degree. He was known to every one but himself as 'Lightning George'. Those who knew him at that time are becoming fewer as time goes on, but I feel that everyone of us will remember him with feelings of the highest respect and affection for both his personal and professional qualities." (83) Another officer, a major on the active list, expresses similar admiration for the former commandant. "There was McIver directing things, a slow-moving, grizzled Scotchman of much earnestness," he says. "He was a man fired by zeal in his mission of rousing the army from the lethargy that threatened it after the Spanish-American War." (84)

Colonel S. W. Miller, who succeeded Major McIver as commandant, is described by a former instructor as "a stickler for discipline and a man of very soldierly qualities. He never interfered with instruction but kept the school up to a high standard of military appearance and efficiency. He was just the type of balance wheel to have in such an organization." (85) Another former instructor says that the colonel was very "strong on police and administrative work." (86) Brief reference to a few additional character sketches will serve to illustrate the impressions of the school's personnel which have been retained in the memories of their associates for more than two decades. There was Tom Brown, "one of the greatest

(83) Twyman.
(84) Fletcher.
(85) Sears.
(86) Pickering.

in the machine-gun game. A man of advanced ideas and yet one who never let his ideas run wild. (87) An iron man, working night and day, and helping his chief light the way through the darkness of indifference, and many times taking the initiative himself." (88) Jim Pickering "ran the whole show throughout the course and after his numerous lectures always curbed a lot of unnecessary discussion by invariably answering questions with 'I don't know' ". (89) Parker Hitt was considered the mechanical and technical expert and (without reflecting on the remainder of the faculty) as the "motivating brains" of the school. (90) George Stritzinger was a recognized authority on rifle marksmanship and once while acting as post commander he contrived to have himself sent as a competitor in a distant competition in which he won a medal. (91) There was John Henry ("Gatling-Gun") Parker, the ardent champion of machine guns "who was in the Officers' Club any day to tell all that was worth telling about their history." (92) There were the well-known characters, Ordnance Sergeants Puckett and "Gun-sling" Davidson, who, besides their skill on the target range, were gifted with other extraordinary and useful accomplishments, one of which was the ability to produce "just the article wanted and when it was wanted." (93) And, in anonymity and obscurity there were the enlisted men of the school troops who worked steadily throughout each school session and whose exemptions from post duties were hardly sufficient compensation for the extra work they were required to perform. (94)

Nearly a quarter of a century has passed since the School of Musketry kindled its guiding light and beckoned "follow me" to the infantry stumbling in paths of darkness. Its founders were hardy and far-seeing pioneers. Into the

(87) Hitt.
(88) Fletcher.
(89) Sears.
(90) Petty.
(91) Petty; Stritzinger.
(92) Hitt.
(93) Twyman.
(94) McIver.

wilderness of indifference and neglect they hewed a clearing, and there they laid the foundations of a structure which was to tower above the miasma of stagnation; a temple of the new faith whose gospel presently was to lead infantrymen out of the desert of error to the oasis of knowledge and progress. And as these pioneers labored earnestly, so they labored not in vain, for they builded better than they knew.

CHAPTER 2

Entrucking A Command

(Peace Strength Infantry Regiment of Triangular Division)

(AN INFANTRY SCHOOL TEACHING)

The purpose of this chapter is to present in detail the logistics and technique of moving the dismounted elements of infantry units in non-organic motor vehicles, i.e., in vehicles that come from a source outside of the unit being moved. This chapter covers the handling of such motor vehicles from the time they come under the control of the infantry commander until the loaded vehicles are en route to their destination.

Brief oral orders are all that are necessary to move a battalion or smaller unit. On the other hand, thorough plans and preparations are needed to move regiments or larger units. The computations and technique given in this chapter are for moving a regiment or higher unit. The methods, however, are applicable to the movement of both small and large units.

There are two sources from which vehicles may be obtained for moving troops by motor:

1. By the requisition of civilian motor vehicles. (This may be done only when authorized by higher authority and therefore is equivalent to receiving the vehicles from a higher echelon.)

2. By the temporary attachment of vehicles from a higher echelon. Such vehicles may be furnished from the quartermaster trains of division, corps, or army; or they may consist of organic transportation of other units.

In planning a troop movement, consideration should be given to—

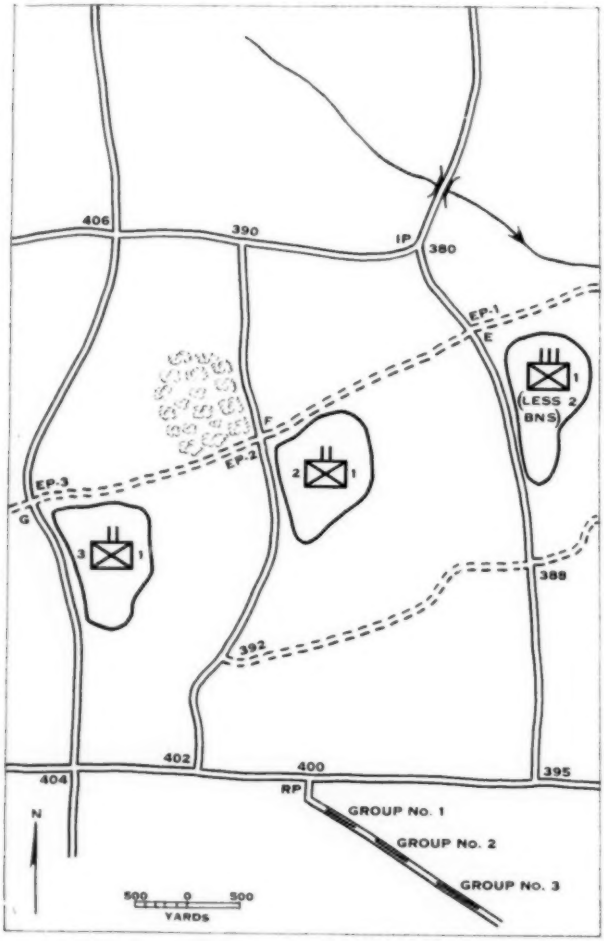


FIGURE 1.—Situation map for entrucking 1st Infantry.

1. The tactical situation regarding the enemy and our own troops.

2. The troops to be moved, their equipment and material.
3. The routes to be followed and the destination of the unit.
4. The hour of starting and the period during which the motor transportation is to be available.
5. The number and type of motor vehicles to be used.
6. The division of the transportation into suitable groups.
7. Security measures for the movement.

The plan for entrucking should provide for—

1. A regulating point (RP).
2. The number and designation of entrucking groups.
3. Entrucking points (EPs).
4. An initial point (IP).
5. The selection of routes between the regulating point, entrucking points, and the initial point.

REGULATING POINT

A regulating point (RP) should be an easily recognizable terrain feature, such as a crossroads, at which the empty trucks are devided into groups and started towards the various entrucking points. (See Figure 1.) A staff officer of the unit being moved should be stationed at the regulating point to insure that the trucks are properly divided and receive essential instructions. The trucks of *each group* usually halt at the regulating point for two minutes to receive orders and pick up guides. The use of motorcycle guides obviates delay. The truck groups are dispatched to their respective entrucking points in the order in which they are to pass the initial point upon being reformed into column. The unit guides conduct the trucks of each group to their designated entrucking point.

ENTRUCKING AND DETRUCKING POINTS

There must be an entrucking (detrucking) point for every group. Near or within the camp, bivouac, or assembly area of the troops, points are selected where the various units will be entrucked. Such a point is called an entrucking point (EP). They should be well defined terrain

features and should be located as close to the assembly area of the troops as the road net will permit—preferably on the side of the area towards the initial point. (See Figure 1.) They should be so located that truck transportation can be closed up within the areas and so that the distances necessary for the troops to march are reduced to a minimum. Entrucking points are numbered in the order in which their entrucking groups pass the initial point.

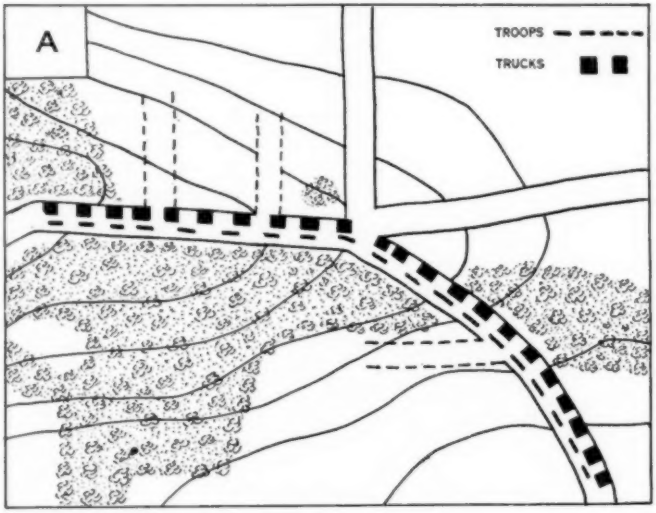


FIGURE 2.—Securing dispersion of troops at entrucking points.

When a main highway is being used by other traffic, entrucking should be done on side roads. When entrucking in small towns with narrow streets, it is generally advisable to stop or reroute other traffic towards the outskirts of the town and keep interior traffic off the streets until the motor-transport column leaves the town. When there is danger from air or mechanized attack the massing of troops and transportation and the lining up of trucks in column at both entrucking and detrucking points should be kept to a minimum. Parts A and B of Figure 2 show the same

number of trucks. In Part A the trucks have been halted in a single column on one road with short distances (ten yards) between trucks.

The troops have been marched in column alongside the vehicles, thus forming a crowded mass and making an ideal target for hostile air attacks. In Part B the same number

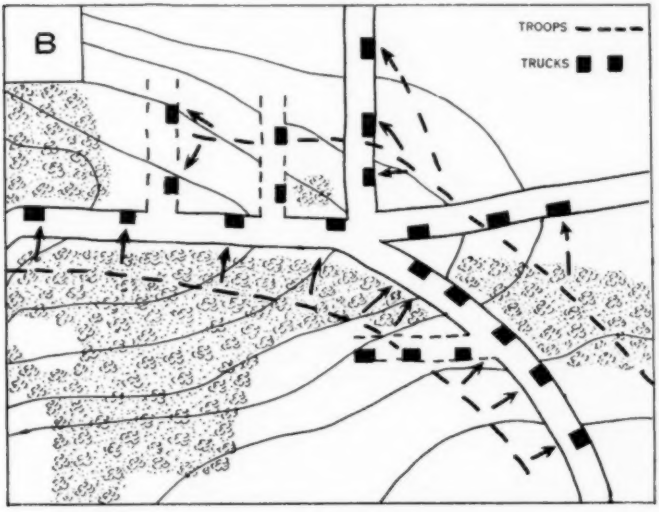


FIGURE 2.—Securing dispersion of troops at entrucking points.

of trucks have been placed along the same length of road, but by using side roads, lanes and driveways, the troops and trucks are dispersed. Troops can approach the trucks in small columns from off the road, thus remaining in a deployed formation which is less vulnerable to air attacks. Dispersion at detrucking points can be secured by using the same general plan. If this action must be taken, additional time should be allowed the entrucking groups for clearing the entrucking (detrucking) points. After entrucking is accomplished the guides lead the entrucking groups to the initial point so as to arrive at the designated hour.

ENTRUCKING GROUPS

An entrucking (detrucking) group consists of the troops and their materiel and equipment that are to be entrucked (detrucked) at a given entrucking point, and includes the vehicles used. The time available for the movement, the road net, the location of the bivouac or assembly area, and the tactical situation with respect to hostile air and mechanized threats will determine the number of entrucking (detrucking) groups used. Usually the troops of the entrucking groups should be at least the strength of a battalion. The number of entrucking groups often depends on how widely dispersed the troops will be upon arrival of the motor transportation. Every movement is a different problem and the methods of entrucking must be worked out for the specific situation if the movement is to be accomplished smoothly. In order to restore the integrity of motor-transport units on leaving the area, entrucking groups are numbered serially in the order in which they will clear the initial point.

INITIAL POINT

On leaving the entrucking area after the trucks are loaded, it is necessary to have a point or points designated where the truck column is reassembled on the way out of the area. This point is called the initial point (IP). (See Figure 1.) It should be a well defined terrain feature and should be as near the entrucking area as practicable without causing any group extra travel. A staff officer of the unit being moved is stationed at the initial point to insure that groups leave the area at the proper time and in the prescribed order. The guides with each entrucking group report to the staff officer who places the groups in the column. The motor-transport column must pass the initial point in the same order in which it passed the regulating point.

Road circuits between the regulating, entrucking and initial points should be so selected that trucks do not have to turn around on a road or double back on incoming

columns. These circuits should be the shortest practicable routes through an area. Where feasible, the longer haul should be made and the steeper grades passed with the trucks empty.

The formation of troops at entrucking points varies as shown in Figure 3.

When trained and experienced troops are to be entrucked, it is sufficient to indicate to each subordinate unit the location of entrucking points and the number and capacity of the vehicles assigned. Counting off men into vehicle loads, and designating which trucks are to carry them can be left to the troop officers. When entrucking must be accomplished under difficult conditions, or with inexperienced troops, a method that insures rapid and orderly loading is to use the assistant vehicle drivers or specially designated men as guides to lead the men to their proper trucks. The 2½-ton cargo truck will carry 25 men per truck. When truck companies of these trucks are available the foot troops are counted off in groups of 25. When the motor transportation arrives, each assistant driver or specially designated man then leads the proper group to his truck.

If careful arrangements have been made beforehand and correct methods are employed, only a few minutes are required for men to enter the trucks. Fifteen minutes, however, is ordinarily allowed for the entrucking of personnel with individual equipment. Generally, there is a halt of 30 minutes at the entrucking point for the inspection and servicing of vehicles, and during the last 15 minutes of this time entrucking is accomplished. Personnel should not be loaded so early that they spend appreciable time in the trucks waiting for the movement to begin.

In computing the number of trucks required to move any unit or group of units, the first step is to determine the number of men to be transported. This is ascertained by deducting, from the total strength of the units to be moved, the number of men who will be transported in the organic vehicles of the unit. (See Figure 4.) These men are shown in column 4 of the figure.

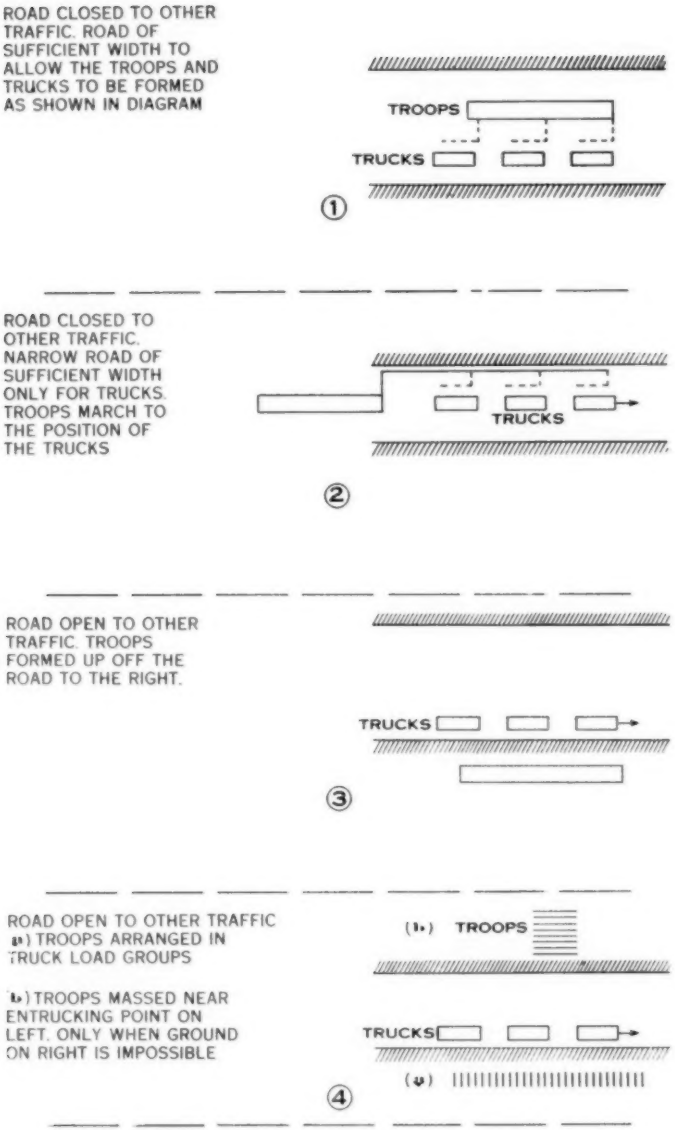

ROAD CLOSED TO OTHER TRAFFIC. ROAD OF SUFFICIENT WIDTH TO ALLOW THE TROOPS AND TRUCKS TO BE FORMED AS SHOWN IN DIAGRAM
TROOPS
TRUCKS
①
ROAD CLOSED TO OTHER TRAFFIC. NARROW ROAD OF SUFFICIENT WIDTH ONLY FOR TRUCKS. TROOPS MARCH TO THE POSITION OF THE TRUCKS
TRUCKS
②
ROAD OPEN TO OTHER TRAFFIC. TROOPS FORMED UP OFF THE ROAD TO THE RIGHT.
TRUCKS
③
ROAD OPEN TO OTHER TRAFFIC
(a) TROOPS ARRANGED IN TRUCK LOAD GROUPS
(b) TROOPS MASSED NEAR ENTRUCKING POINT ON LEFT. ONLY WHEN GROUND ON RIGHT IS IMPOSSIBLE
(b) TROOPS
TRUCKS
(a)
④

FIGURE 3.—Entrucking formations.

INFANTRY REGIMENT, RIFLE

	1	2	3	4	5	6
Line No.	UNIT	T/O Peace Strength	Transported in Organic Motors	Strengths for which transportation must be furnished	Number of Trucks Required	
					1½-ton	2½-ton
1	Rifle Co	133	6	127	9	5
2	Rifle Plat	(33)	——	(33)	(3)	(2)
3	Weapons Plat	(23)	(1)	(22)	(2)	(1)
4	Heavy Weapons Co	128	68	60	4	3
5	Cal. .30 MG Plat	(37)	(16)	(21)	(2)	(1)
6	Cal. .50 MG Plat	(19)	(12)	(7)	(1)	(1)
7	81-mm Mort Plat	(18)	(12)	(6)	(1)	(1)
8	Bn Hq & Hq Det	28	7	21	2	1
9	Inf Bn (w/o atchmts)	555	93	462	31	19
10	Bn Com Sec (from Regt Hq Co)	(12)	(8)	(4)	(1)	(1)
11	Atchd Med (Bn Sec)	(21)	(8)	(13)	(1)	(1)
12	Inf Bn (w/Com Sec, Bn Sec Serv Co, & Bn Sec Med Det, atchd)	598	119	479	32	20
13	Hq & Hq Co Inf Regt (a)	137	108	29	2	1
14	AT Plat (b)	(44)	(44)	0	0	0
15	Serv Co	74	64	10	1	1
16	Med Det, Inf Regt	77	38	39	3	2
17	Inf Regt	1953	489	1464	99	61

(a) Includes 2 chaplains not shown elsewhere in table.

(b) Includes 3 chauffeurs for trucks not authorized by Tables of Organization.

FIGURE 4.—Personnel and trucks for movement of infantry regiment (peace strength).

The numbers shown on the figure are based on T/O 7-11, Infantry Regiment effective January 1, 1939. This table was modified by a letter from the AGO dated September 16, 1939 which eliminated the regimental bands, and by the new T/O 7-18 for the Rifle Company which became effective on February 1, 1940. The data showing the number of men to be transported in organic motors is based on the use of ½-ton, 4 x 4, trucks as both command vehicles and weapon and ammunition carriers. This is in accordance with Tables of Basic Allowances No. 7, Supplement, War Department, October 30, 1939. For complete details as to the loading for all infantry vehicles see Chapter 9.

The second step is to determine the number of trucks required. Refer to column 5 or 6, Figure 4, depending upon whether 1½ or 2½-ton truck companies are available. The packs of soldiers may be strapped to the back of the seats and hung outside of the truck body, or they may be placed under the seats.

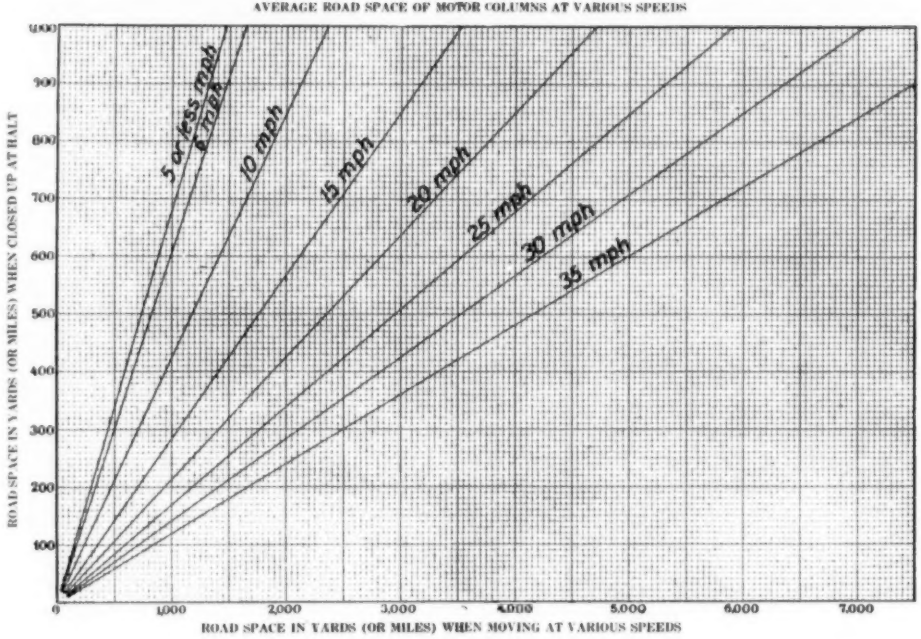
Example: Determine how many trucks will be required to move a peace-strength battalion without attachments. In the line "Infantry battalion (w/o atchmts)", Figure 4, the second column gives the total strength of the battalion as 555; the third column shows that of the total strength 93 are transported in organic motors, leaving 462 officers and men for which transportation must be furnished. From columns 5 and 6, it is seen that 31 1½-ton trucks (at 15 men per truck) or 19 2½-ton trucks (at 25 men per truck) are required to transport the 462 dismounted men.

Trucks halted and closed up occupy a road space of 10 yards each. Therefore, if the number of trucks is multiplied by 10 the answer will be the road space, in yards, of the unit when entrucked, halted and closed up. Use the graph in Figure 5 to find the road space of the unit when it is moving. This graph is copied from Table 4, Reference Data, Command and General Staff School, 1939. The average road space of the number of 1½-ton trucks required to transport the dismounted elements of a peace-strength infantry battalion running at a speed of 25 miles per hour is calculated as follows:

31 (number of trucks required) x 10 (road space per truck, when halted and closed up) = 310 yards. By referring to Figure 5 it is found that this figure of 310 yards gives a total road space when running at 25 miles per hour of 1700 yards.

ENTRUCKING TABLE

An entrucking table is a schedule of arrival, loading, and departure, worked out in advance, to insure that a troop movement by motor transportation begins in an orderly manner, with each group taking the road in turn and with the minimum of confusion and delay. See Figure 6 for form of entrucking table.


AVERAGE ROAD SPACE OF MOTOR COLUMNS AT VARIOUS SPEEDS
ROAD SPACE IN YARDS (OR MILES) WHEN CLOSED UP AT HALT
ROAD SPACE IN YARDS (OR MILES) WHEN MOVING AT VARIOUS SPEEDS
5 or less mph
8 mph
10 mph
15 mph
20 mph
25 mph
30 mph
35 mph
100
200
300
400
500
600
700
800
900
1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000

NOTES FOR FIGURE 5

1. This chart applies to road movements by motor columns in which vehicles keep closed up to safe driving distances. Safe driving distance is assumed to be constant (14 2/3 yards, center to center, for cars or trucks up to 3-ton) for speeds up to 5 mph and to increase with the speed for rates above 5 mph.

2. This chart gives AVERAGE road space. ACTUAL road space may vary 25% either way, depending on conditions.

3. To use chart:

a. Compute the length of column closed up at the halt. (Number of trucks x 10 yards per truck, or x 13 yards per truck with trailer.)

b. Locate this figure in vertical scale on left of chart.

c. Follow horizontal line to right to intersection with diagonal line indicating the proper rate of travel.

d. From this intersection follow vertical line down to horizontal scale.

e. Read on horizontal scale the average road space of the column.

4. EXAMPLE: Find road space at 25 mph of a motor column consisting of 48 trucks, 1½-ton, half of which have trailers attached.

The length of the column closed up at the halt equals 24 x 10 plus 24 x 13 equals 552 yards.

Locating this figure in the vertical scale at the left of the chart, following a horizontal line from this point to the right to intersection with the diagonal line marked 25 mph, thence following a vertical line down to the horizontal scale at the bottom of the chart, the average road length of this column at 25 mph is found to be 3,235 yards.

5. For road spaces, halted, greater than 1,000 yards, multiply the scale of both ordinates and abscissae by 10 or 100.

FIGURE 5.—Road space graph.

Maps: Annex No. ..... to Field Orders No. ..... (Heading)

ENTRUCKING TABLE

For Troop Movement by Motor Transportation

1	2	3	4	5	6	7	8	9	10	11
Group	Troops (less Motor Elements)	Motor Transportation Assignment	RP and Hour Head Passes	Route RP to EP	EP and Hour Head Reaches it	Hour entrucking begins	Hour Head Leaves EP	Route from EP to IP	IP and Hour Head Passes	Detrucking points

Column Clears IP at ..... Route .....
(Authentication) (Signature)

FIGURE 6

For calculating the data for entrucking tables, a work sheet is convenient. (See Figure 7.)

ILLUSTRATIVE PROBLEM

The dismounted portion of a peace-strength infantry regiment is to be moved by motor transport. The battalion communication sections, the battalion sections of the transportation platoon of the service company and the battalion sections of the medical detachment have joined their respective battalions.

The regiment is bivouacked as shown in the situation map (Figure 1).

Company R and 16 trucks of the 1st Platoon Company T, 16th Quartermaster Regiment (Truck—Corps) have been made available for the movement. The truck company consists of 48 2½-ton trucks. They will arrive in the order R Company, trucks of the 1st Platoon T Company, The head of the truck column will arrive at RJ 400 at 8:00 PM tonight from the south.

The regiment is to move north on the road leading out of the area from RJ 380 at the earliest practicable hour.

There will be a 2 minute delay at the regulating point to receive orders and pick up guides.

Trucks will be halted 30 minutes at entrucking points for inspection and reservicing.

There is no restriction on the use of lights, and no special precautions need be taken because of the threats of air attacks.

Unimproved roads in the sketch (Figure 1) are unsuitable for use by motor vehicles.

REQUIREMENT

Prepare the entrucking table for the movement.

WORK SHEET

RP—Regulating Point = _____

IP—Initial Point = _____

EP—Entrucking Point(s)

(1) _____ (2) _____

(3) _____ (4) _____

For determining hours to be entered on entrucking table

1	2	3		4	5	6	7	8	9	10
Group No. (Order of clearance of IP)	Number of trucks assigned	Length of group in minutes at: a MPH	b MPH	Hour head of group passes RP. (For second and succeeding groups, add time-length of preceding group plus delay at RP)	Time distance RP to EP	Hour head of group arrives at EP (4+5)	Time distance EP to IP	Hour head of group passes IP (See note a)	Hour head of group leaves EP (8—7)	Hour entrucking begins (9 minus 15 minutes if loading personnel only; 30 minutes if loading animals or material)

NOTE.—a. To determine the hours to be entered in Column 8: Find the earliest hour that the group having the longest time-distance through the area (Columns 5 and 7) can pass the IP. With this hour as a basis determine the hour the preceding and succeeding groups must pass the IP in order to reestablish the motor transport column.

Column clears IP at _____ M
(See note b)

b. To find hour last group clears area, add last entry in Column 3 to last entry in Column 8.

FIGURE 7.—Form for work sheet.

A SOLUTION OF THE REQUIREMENT

Using the work sheet (Figure 7) solve the problem along the following lines.

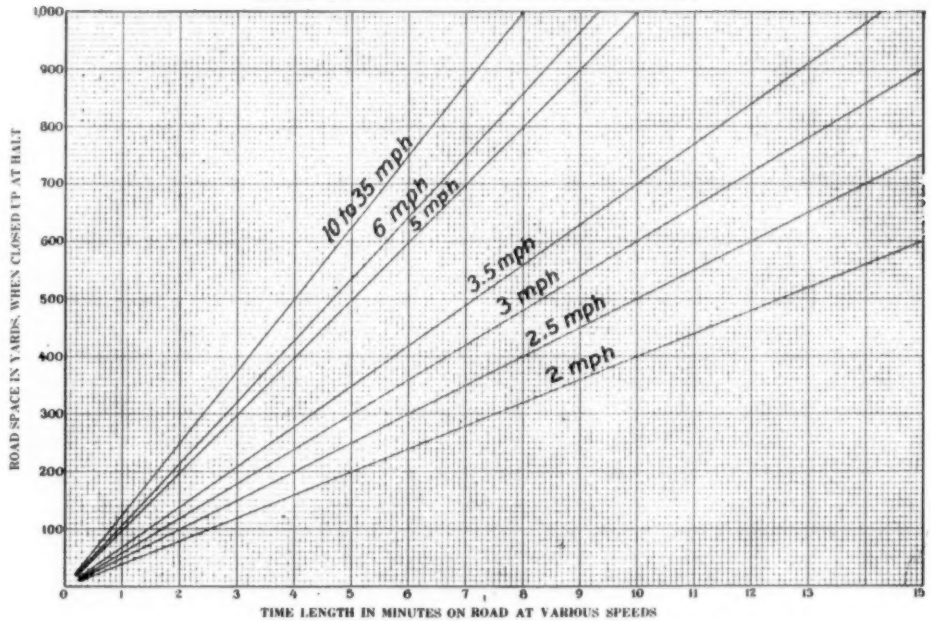
(*NOTE.* The blank forms for an entrucking table and the work sheet have been inserted with the hope that you will actually use them. The preparation of an entrucking table is a very simple procedure IF YOU PREPARE THE DATA IN A LOGICAL STEP-BY-STEP MANNER. Take out your pencil. As the steps are explained in the following solution, make the proper entries on the blank work sheet and entrucking table. The simplicity of the procedure will surprise you. Editor.)

Select a regulating point. RJ 400 is suitable for this purpose and it is entered at the top of the work sheet. If the trucks were to report to Colonel 1st Infantry at some point south of RJ 400 at 8:00 PM, they should be moved in a single column to the regulating point. In such a case the time of arrival at RJ 400 would have to be figured by adding to 8:00 PM the time distance between the place of reporting and RJ 400. This problem is simplified because the trucks report at RJ 400, which is the regulating point.

Determine the number of entrucking groups, select an entrucking point for each, and number them in the proper sequence. The entire 1st Infantry is to be moved by motor transportation. From Figure 1, it can be seen that the regiment less two battalions is in one bivouac area and that the 2d and 3d Battalions each occupy a separate area. Hence one entrucking group is selected for each bivouac area. As it is desired that the regiment be formed in column in the order 1st, 2d and 3d Battalions the entrucking groups are numbered 1, 2 and 3 respectively and the corresponding entrucking points at E, F, and G are similarly numbered. The form should now show the three entrucking points in the upper right corner and column 1 should show the three groups.

An initial point is next selected. This is a point through which all entrucking groups must be able to pass on the way out of the area without back-tracking. From the sketch

AVERAGE TIME LENGTHS OF MOTOR COLUMNS AT VARIOUS SPEEDS



NOTES FOR FIGURE 8

1. This chart applies to road movements by motor columns in which vehicles keep closed up to safe driving distances. From 10 mph to 35 mph the safe driving distance varies directly with the speed, and the time length of a column is therefore constant. At 5 mph or less the safe driving distance is assumed to be constant (14 2/3 yards, center to center, for cars or trucks up to 3-ton) and the time length of a column therefore varies inversely with the speed.

2. This chart gives AVERAGE time length. ACTUAL time length may vary 25% either way, depending on conditions.

3. To use chart:

a. Compute the length of column closed up at the halt.

b. Locate this figure in vertical scale on left of chart.

c. Follow horizontal line to right to intersection with diagonal line indicating the proper rate of travel.

d. From this intersection follow vertical line down to the column.

4. EXAMPLE: Find time length at 25 mph of a motor column consisting of 50 trucks, 3-ton.

The length of column closed up at the halt is 50 x 10 equals 500 yards.

Locating this figure in the vertical scale at the left of the chart, following a horizontal line from this point to the right to intersection with the diagonal line marked 10 mph to 35 mph, thence following a vertical line down to the horizontal line at the bottom of the chart, the average time length of this column at 25 mph is found to be 4 minutes.

5. For road spaces, halted, greater than 1,000 yards, multiply the scale of both ordinates and abscissae by 10 or 100.

FIGURE 8.—Time length chart.

(Figure 1) it can be seen that RJ 380 fulfills these conditions. Therefore, enter it in its proper place on the work sheet.

The next thing to determine is the number of trucks to be assigned to each group. Figure 4 shows that an infantry regiment using 2½-ton trucks requires 61 trucks to move its dismounted elements; and likewise, that each infantry battalion with attachments requires 20 trucks. Since Entrucking Group 1 consists of the 1st Infantry less two battalions (see Figure 1), and since each battalion requires 20 trucks; Group 1 can be moved by 61 trucks less 40 trucks, or 21 trucks. Entrucking Groups 2 and 3 will require 20 trucks each. This leaves three extra trucks which should be assigned to the last group. Enter the number of trucks required, including any extras, in column 2 of the work sheet.

The next step is to find the time length of each group. First find the road space of each group when closed up at a halt. Again using the 10 yards per truck, it is found that Group 1 will be 210 yards (21 x 10), Group 2 will be 200 yards, and Group 3 will be 230 yards. Now apply these road space figures to the chart (see Figure 8). Each group will be found to have a time length of 2 minutes. (The value of the next full minute should be taken when a fraction exists.) Place these values in column 3 of the work sheet. The *a* and *b* under 3 refer to cases when more than one rate of march is used. Assume in this situation that it became dark prior to 8:00 PM and since there is no restriction on the use of lights, 25 miles per hour is the rate to use. The chart is an extract from Table 5, Reference Data, Command and General Staff School, 1939.

The hour the head of each group passes the regulating point can now be determined. The head of the truck column reached the RP at 8:00 PM.

The column halts for two minutes while the trucks to form the first group are assigned, instructions issued and the guides report. This group has been found to be 2 minutes long; hence, its tail will clear the regulating point at 8:04 PM. The second group, which is directly in rear,

will reach the regulating point at the same time, halt 2 minutes to pick up its guides, and the head of the column will pass that point at 8:06 PM. In a similar manner it is determined that Group 3 will pass the regulating point at 8:10 PM. These entries are made in column 4.

Compute the time distance between the regulating point and the entrucking point for each group. Using Figure 1, measure the distance in yards from the regulating point to each entrucking point. For Group 1, for example, this distance is 6,450 yards. Dividing 6,450 by 733 (the rate in yards per minute at 25 miles per hour), or determining directly from the Humphrey scale, the time distance is 9 minutes. Group 2 is 4,500 yards away from the regulating point. Its time distance is 7 minutes. Group 3 is 4,900 yards away and its time distance is 7 minutes. The time distance for each group is entered in column 5 of the work sheet.

Now find the hour at which the head of each group arrives at its entrucking point. Since the head of Group 1 passes the regulating point at 8:02 PM and the entrucking point is 9 minutes away, the trucks should reach the entrucking point 9 minutes after they pass the regulating point, or at 8:11 PM. Similarly, for Groups 2 and 3 the trucks will reach the entrucking points at 8:13 PM and 8:17 PM, respectively. These hours are entered in column 6 of the work sheet.

Then compute the time distance entrucking point to initial point. The entrucking point of Group 1 is only 1050 yards from the initial point—a time distance of 2 minutes. Group 2 is 3,650 yards, or 5 minutes time distance; and Group 3 is 5,800 yards or 8 minutes time distance. Enter these time distances in column 7 of the work sheet.

Note *a* on the work sheet shows a method for determining the hour that the heads of groups pass the initial point. This method is based on the controlling group, i.e., the group which has the greatest distance to travel through the area. Columns 5 and 7 show the time distances for each group over its route RP—EP—IP. By adding the minutes

WORK SHEET

RP—Regulating Point = RJ 400

IP—Initial Point = RJ 380

EP—Entrucking Point(s)

(1) CR at E (2) CR at F

(3) CR at G (4)

For determining hours to be entered on entrucking table

1	2	3		4	5	6	7	8	9	10
Group No. (Order of clearance of IP)	Number of trucks assigned	Length of group in minutes at: a MPH	b MPH	Hour head of group passes RP. (For second and succeeding groups, add time-length of preceding group plus delay at RP)	Time distance RP to EP	Hour head of group arrives at EP (4+5)	Time distance EP to IP	Hour head of group passes IP (See note a)	Hour head of group leaves EP (8−7)	Hour entrucking begins (9 mins 15 minutes if loading personnel only; 30 minutes if loading animals or material)
1	21	2		8:02 PM	9′	8:11 PM	2′	8:51 PM	8:49 PM	8:34 PM
2	20	2		8:06 PM	7′	8:13 PM	5′	8:53 PM	8:48 PM	8:33 PM
3	23	2		8:10 PM	7′	8:17 PM	8′	8:55 PM	8:47 PM	8:32 PM

Column clears IP at 8:57 P M
(See note b)

NOTE.—a. To determine the hours to be entered in Column 8: Find the earliest hour that the group having the longest time-distance through the area (Column 5 and 7) can pass the IP. With this hour as a basis determine the hour the preceding and succeeding groups must pass the IP in order to reestablish the motor transport column.

b. To find hour last group clears area, add last entry in Column 3 to last entry in Column 8.

FIGURE 9.

in columns 5 and 7 it is found that these time distances for groups are as follows:

Group 1—9 min. plus 2 min. equals 11 min.

Group 2—7 min. plus 5 min. equals 12 min.

Group 3—7 min. plus 8 min. equals 15 min.

Group 3, with the greatest time disance, is the controlling group. Group 3, having reached the entrucking point at 8:17 PM, delays 30 minutes for inspection, servicing, and loading and then travels for 8 minutes to the initial point. The time consumed after 8:17 PM is 30 plus 8 or 38 minutes. Therefore, it can reach the initial point at 8:17 plus 38 minutes or at 8:55 PM. The tail of Group 2 must clear the initial point as Group 3 reaches it and since Group 2 is 2 minutes long, its head should pass the initial point at 8:55 minus 2 minutes, or at 8:53 PM. Similarly, Group 1, which is 2 minutes long, should pass the initial point at 8:51 PM. Enter these hours in the proper place in column 8 of the work sheet.

The hour the head of each group leaves its entrucking point is found as follows: Column 8 of the work sheet shows the hour at which the head of each group can pass the initial point, and column 7 shows the time distance of each group from the initial point. By subtracting the time distance (EP to IP) from the hour each group passes the initial point, there is found the hour each group must leave its entrucking point. For example, Group 1 leaves at 8:51 minus 2, which is 8:49 PM. In the same way, determine the hour for each group and enter it in column 9.

Find the hour entrucking begins for each group. In this problem, only personnel is being loaded so allow 15 minutes for entrucking. This period is concurrent with the delay at each entrucking point of 30 minutes, for inspecting and servicing the trucks. Since Group 1 leaves its entrucking point at 8:49 PM, entrucking must begin 15 minutes before that hour, or at 8:34 PM. Similarly, entrucking begins for Group 2 at 8:33 PM and for Group 3 at 8:32 PM. These hours are entered in column 10 of the work sheet. They determine the time the entrucking should begin.

MAPS: Annex No. ..... to Field Orders ..... (Heading)

ENTRUCKING TABLE

For Troop Movement by Motor Transportation

1	2	3	4	5	6	7	8	9	10	11
Group	**Troops (less Motor Elements)**	**Motor Transportation Assignment**	**RP and Hour Head Passes**	**Route RP to EP**	**EP and Hour Head reaches it**	**Hour entrucking begins**	**Hour Head Leaves EP**	**Route from EP to IP**	**IP and Hour Head Passes**	**Detrucking Points**
1.	Col 1st Inf —— 1st Inf (Less 2d and 3d Bns)	Co R (less 27 trucks	RJ 400 8:02 PM	RJ 400—RJ 395 -RJ 388 -E	E 8:11 PM	8:34 PM	8:49 PM	E-RJ 380	RJ 380 8:51 PM	
2.	Lt Col 2d Bn 1st Inf —— 2d Bn 1st Inf	20 trucks Co R	RJ 400 8:06 PM	RJ 400—RJ 402 -RJ 392-F	F 8:13 PM	8:33 PM	8:48 PM	F-RJ 390- RJ 380	RJ 380 8:53 PM	
3.	Lt Col 3d Bn 1st Inf —— 3d Bn 1st Inf	7 trucks Co R and 16 trucks Co T	RJ 400 8:10 PM	RJ 400—RJ 404 -G	G 8:17 PM	8:32 PM	8:47 PM	G-CR 406- RJ 390-RJ 380	RJ 380 8:55 PM	

Column clears IP at 8:57 PM.

(Authentication)

Route: .....

(Signature)

FIGURE 10.

Finally, determine the hour the truck column clears the initial point. See Note *b*, on the work sheet. Since Group 3 is to be the last group, and since its head passes the initial point at 8:55 PM, its tail will pass that point 2 minutes (its time length) later, or at 8:57 PM.

The work sheet is now complete and transfer of data may be made to the entrucking table, Figure 10. This table is used as a numbered annex to the field order for the movement. Its body contains, in the form of a table, the data on the work sheet as well as other necessary directions for movement to the initial point.

In column 1, are placed the same numbered groups as were used on the work sheet.

In column 2, is entered the group commander and the troops composing each group.

For column 3, determine and enter the motor-transport organizations required to move each group. Group 1 requires 21 trucks and can use Company R (less 27 trucks). Group 2 requires only 20 trucks and can use 20 of the remaining trucks of Company R. This will leave 7 trucks of Company R and the 16 trucks of the 1st Platoon Company T, which can carry Group 3 and still have 3 extra trucks. In order to have the extra trucks available at the tail of the entire column they have been placed with Group 3. In this case, the addition of the 3 extra trucks to Group 3 did not change its average time length as both 20 and 23 trucks actually give a time length of 1 and a fraction minutes.

In column 4, indicate the regulating point and the time for each group as taken from column 4 of the work sheet.

In column 5, indicate a route for each group from regulating point to entrucking point.

In column 6, identify the entrucking point for each group and enter the time the head of the column reaches the entrucking point from column 6 of the work sheet.

In column 7, enter the data from column 10 of the work sheet.

In column 8, enter the data from column 9 of the work sheet.

In column 9, specify routes for each group from entrucking point to initial point.

In column 10, specify the initial point and the hour each group passes it, as determined in column 8 of the work sheet.

At the bottom of the form enter the hour the tail of the column clears the initial point as determined on the work sheet.

Columns may be added to the work sheet and the entrucking table as needed. For example, when destinations are known and may be disclosed, additional columns may be added to show the location of a detrucking regulating point, detrucking points, the routes to them, and the time of arrival thereat.

After leaving the initial point, the commander of the motor-transport column conducts it on a time schedule, maintaining a speed that ensures its arrival at the destination at the proper time. Upon arrival at the regulating point of the detrucking area, the groups of the motor-transport column are routed to the various detrucking points previously designated in accordance with the contemplated distribution of troops in the new area. Each group is halted at the detrucking point and closed up. If the situation demands and the terrain permits, the trucks should be dispersed within the detrucking area upon arrival. The signal to detruck is given, and the troops get out of the trucks. If on a road, they clear the road. Ten minutes will suffice for unloading personnel. When the troops are clear of the road, or at a prescribed hour, the empty motor-transport group moves off to a prescribed initial point or bivouac area where the truck column is reassembled under its commander. The troops must remain off the road until it has been cleared by the truck column.

When the situation permits, organic motors should ordinarily be moved separately from the non-organic motors. If the organic and non-organic motors are moved in the same serials it will require careful execution of the entrucking plan to prevent confusion at the entrucking points. There will be times when the tactical situation will demand their movement together.

CHAPTER 3

Fighting An Infantry Rifle Company

(AN INFANTRY SCHOOL TEACHING)

This is primarily a troop leading operation. For a complete discussion as to the organization, functions of company headquarters and the tactical principles of the attack see Chapter 6, Volume XIX, of the Mailing List.

THIS AFTERNOON

The 1st Battalion Blue 1st Infantry, at war strength, is part of a large Blue force which has been advancing toward the northwest for several days. At 4:30 PM today the battalion is located in an assembly area between McCleary School and the woods near Plum Creek. Blue security detachments are in contact with the hostile forces and are covering and protecting the assembly area. The location of Company B, and the security detachments are shown in Figure 11.

At 4:30 PM today, Captain Company B with his first sergeant and two messengers has just reported to the battalion commander in the woods 200 yards southeast of point X. In these woods are some members of the battalion staff and the other company commanders. When all have arrived Lieutenant Colonel 1st Battalion and party move to point X where he issues an oral order, extracts from which follow:

"Here is a sketch of this area. (See Figure 12.) Follow it and make notes.

"We are at the point marked X. That bridge to the northeast is bridge Y. That creek is Plum Creek. That hill which

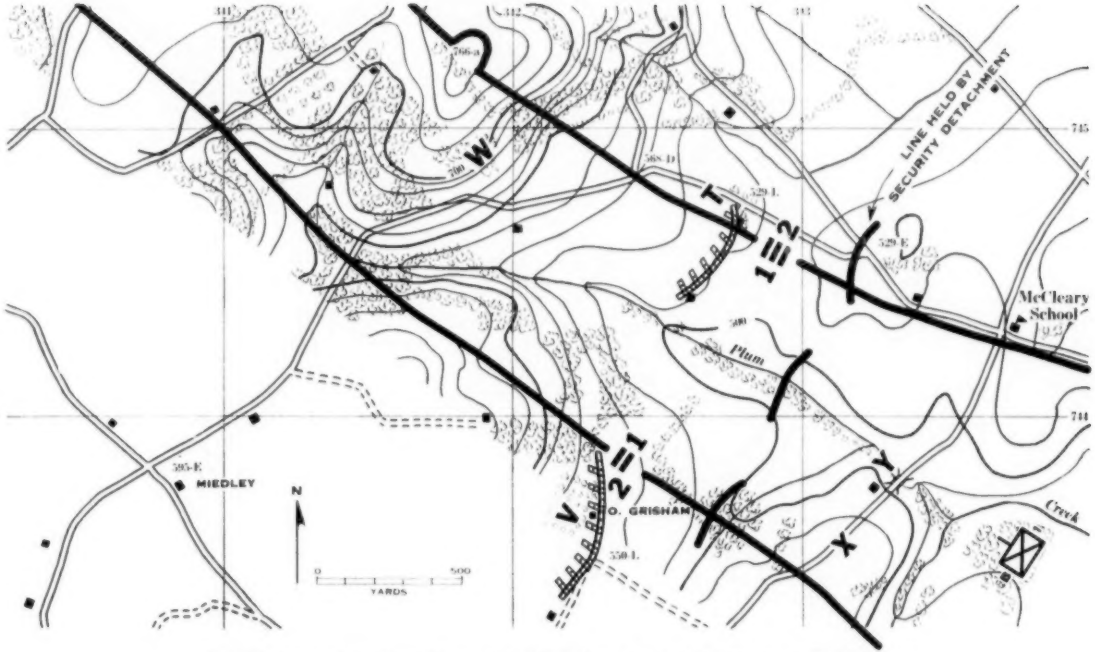


FIGURE 11.—Situation Map, 1st Battalion 1st Infantry at 4:30 PM.

you can see about 2000 yards to the northwest is hill 766-a. Those woods are woods Z.

"Forward elements of the hostile position are located near that house marked T on your sketch, and about 900 yards west of here in an orchard north of that house marked V on the sketch. Other Red troops are reported to be *digging in*, in those woods marked V on the sketch.

"The Blue security detachment is located along the general line: That road junction (RJ 529-E) to the forward edge of that woods. The command post of the security detachment, located in our area, is at that bridge (bridge Y).

"Our regiment, supported by artillery and chemical troops, will attack at daylight tomorrow morning, penetrating the hostile position up Plum Creek, capture hill 766-a, and continue the advance to the northwest. The artillery will fire a 30-minute preparation starting at 5:35 AM. The chemical troops will place smoke on the hostile position southwest of house T. The heavy machine guns of Company M, from positions near that school (McCleary School) will fire, initially, on targets in the vicinity of woods Z.

"This battalion will attack tomorrow morning, penetrating the hostile position up Plum Creek and, assisted by the 2d Infantry on its right, capture hill 766-a and continue the advance toward the northwest.

"Time of attack: 6:05 AM.

"Line of departure: line held by the security detachment.

"Direction of attack: 320 degrees (magnetic).

"Formation: Companies A and B abreast, A on the right (north).

"Zone of action is indicated on your sketch as follows:

"Right boundary: That road on this side of McCleary School to that road junction (RJ 568-D) (exclusive)—crest of hill 766-a (inclusive).

"Left boundary: That road bend just southwest of X—those small woods 500 yards northwest of X—woods Z—a ford about 800 yards northwest of woods Z (all inclusive).

"Company A will attack north of Plum Creek, capture the hostile position just southwest of house T, and continue the attack in the direction of hill 766-a.

"Company B, making its principal effort up Plum Creek, will seize woods Z, assist Company A in the capture of the hostile position near house T, and continue the attack towards the ford 800 yards northwest of woods Z.

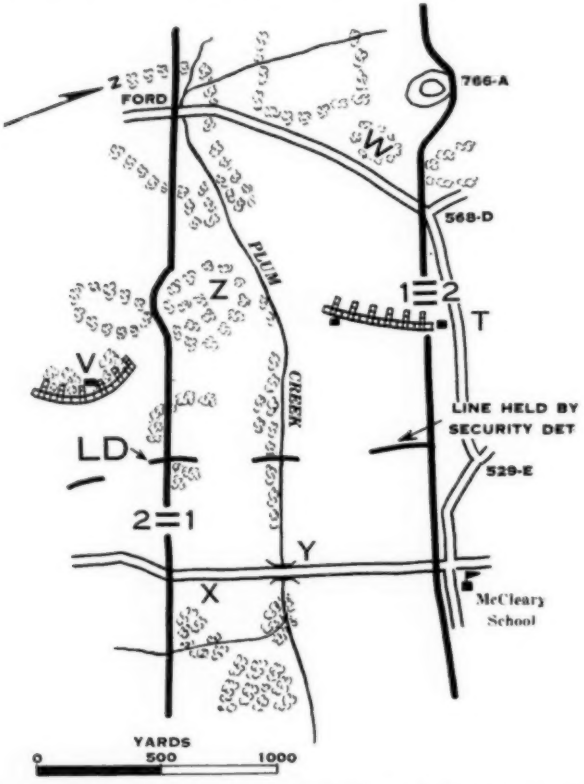


FIGURE 12.—Operation sketch, 1st Battalion 1st Infantry at 4:30 PM.

"Company C, in reserve, * * * . It will maintain contact with adjacent companies.

"Company D, in general support, will support the attack as follows:

"The 1st and 2d Platoons, from initial positions in this vicinity, will fire on the hostile position south of house T.

When their fire is masked by the advance of Company A, one platoon of heavy machine guns will be placed in direct support of Company B.

"The 81-mm Mortar Platoon, from initial positions just east of this point, will fire on the hostile positions south of house T. It will be prepared to fire on targets located in the forward edge of woods Z and in the vicinity of that line of trees just southeast of woods Z.

"Aid station: those woods just southeast of bridge Y.

"Axis of signal communication: Bridge Y—those woods along Plum Creek—woods just west of woods Z.

"Command post: Bridge Y.

"Are there any questions?

"It is now 4:40 PM."

CAPTAIN COMPANY B

What would be the actions taken and the orders as actually issued by Captain Company B between 4:40 PM and dark (6:45 PM) today?

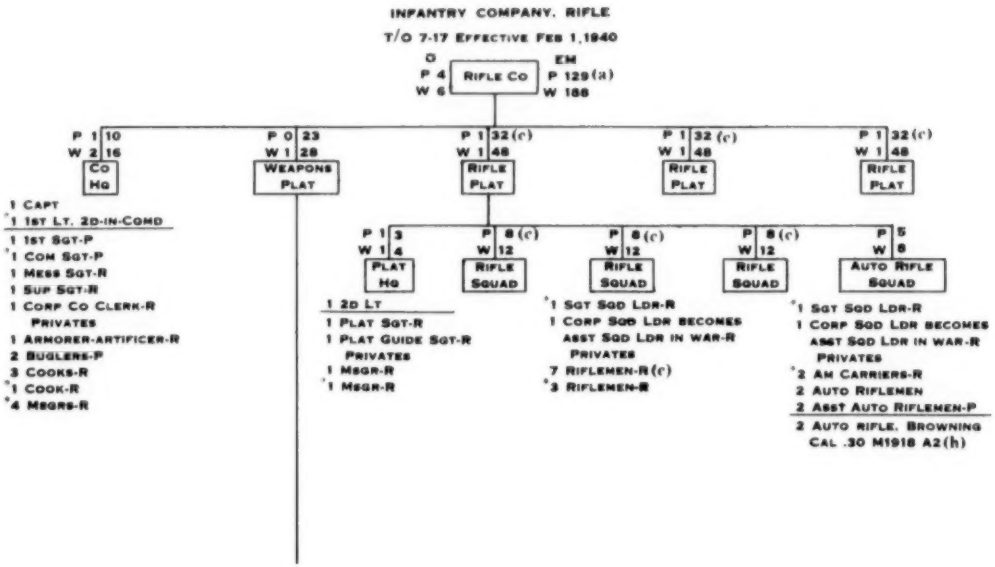
DISCUSSION

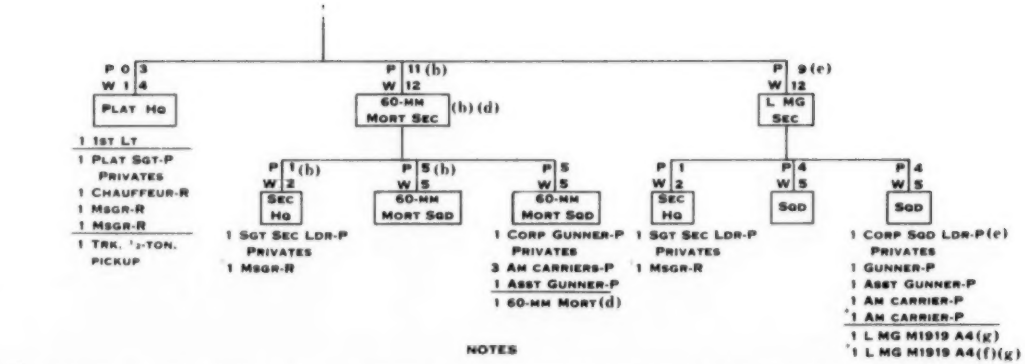
The company commander must make his plan of action as complete as circumstances permit; he should transmit this plan to his subordinates in a form that will be readily understood. In many situations the matter of available time will be the controlling factor. In this situation, Captain Company B has ample time to make his plans and issue his orders. However, he should leave a satisfactory portion to his subordinates. They also, must have sufficient time to make their own reconnaissance and to issue their own orders. To assist them in an understanding of the situation, Captain Company B should provide each company officer with a rough sketch of the terrain over which the company is to operate.

The organization of the rifle company has been changed, effective February 1, 1940, by the addition of one automatic rifle squad in each rifle platoon. The present organization is shown in detail in Figure 12a.

INFANTRY COMPANY, RIFLE

T/O 7-17 EFFECTIVE FEB 1, 1940





NOTES

a. INCLUDES 15 MEN INACTIVE AND NOT AUTHORIZED IN PEACE. ACTIVATED WHEN ORGANIZATION TAKES THE FIELD IN WAR AT PEACE STRENGTH. STRENGTH: 1 SGT, 3 CORPS, 11 PVTS: 9 RIFLES AND 6 PISTOLS. (SEE NOTES b AND c)

b. 60-MM MORT SEC HQ AND ONE SQUAD ARE INACTIVE IN PEACE.

c. INCLUDES ONE RIFLEMAN PER RIFLE SQUAD INACTIVE IN PEACE: ACTIVATED ON MOBILIZATION.

d. 60-MM MORT SECTION HAS THREE MORTARS. ONE INACTIVE IN PEACE: ACTIVATED UPON MOBILIZATION. ONE MORTAR FOR DEFENSE SITUATIONS ONLY IN PEACE OR WAR.

e. LMG SQUAD LEADERS TO BE PFC (ACTING CORPS) IN PEACE.

f. ONE ADDITIONAL LMG FOR DEFENSE ONLY

g. THE BAR M1918 A2 IS A SUBSTITUTE LMG

h. THE BAR CAL .30 M1918 IS A SUBSTITUTE FOR THE BAR M1918 A2 IN THE AUTO RIFLE SQUADS.

* ADDITIONAL FOR WAR STRENGTH

	P	W
TRK. ½-TON. PICKUP	1	1
LMG M1919 A4	2(g)	4(g)
60-MM MORTARS	3(d)	3(d)
AUTO RIFLE, BROWNING, CAL .30, M1918 A2	6(h)	6(h)
PISTOL	34	39
RIFLE US CAL .30 M1	93	149

INFANTRY COMPANY, RIFLE T/O 7-17

FIGURE 12a.—Organization charts, infantry rifle company.

The personal reconnaissance of Captain Company B should include a visit to the main avenue of approach leading into the hostile position. Only an emergency would justify a company commander in committing his command to an attack over terrain that he had failed to reconnoiter personally to the maximum extent practicable. Captain Company B should contact the security detachment to learn details of the terrain and the hostile position.

In developing his company plan of attack, Captain Company B starts with the battalion order, which required a penetration of the hostile position up Plum Creek. In his estimate of the situation, the company commander restricts his consideration of plans to those which will further the battalion scheme of maneuver. The company zone of action is, initially, about 450 yards wide; this fact indicates that breadth of formation will be required. Initial flank security on both sides makes a wide formation practicable. However, depth of formation is indicated by the vagueness of the hostile situation to his front and by the fact that a sustained attack to an objective some 2000 yards in rear of the line of departure is expected. A formation with two platoons in assault and one in support seems to satisfy the conflicting considerations. Captain Company B decides upon this formation and plans a company scheme of maneuver in which one platoon executes a holding attack against the front of woods Z, while another platoon moves to the flank in order to capture the woods. Since initial targets are not located and since ample initial support is being provided by the heavy weapons, Captain Company B plans to have his company supporting weapons follow the right assault platoon under concealment of the woods along Plum Creek. This will place the light machine guns on the flank of anticipated hostile resistance. The 60-mm mortars are ordered to follow the light machine guns, since good firing positions, with some protection from small-arms fire, are available in the vicinity of Plum Creek. From these positions the mortars will be able to deliver observed fire on hostile machine guns sited to enfilade the Plum Creek approach.

With respect to the plan itself, a matter of importance is the difference between the viewpoint of the company commander and that of the battalion commander. The latter often selects an objective at some distance within the hostile position. The commander of an assault company is concerned with regaining control of his unit as soon as it is disorganized either by an assault or a passage of difficult terrain. The company commander must plan on reorganizing his unit as soon as the first terrain feature, which he believes will result in disorganization, is in his possession. In this situation, Captain Company B selects woods Z as such a terrain feature and in his order provides for the capture of these woods. After these woods are in his possession and after reorganization of his unit, he will issue additional instructions to continue the advance.

THE SOLUTION OF CAPTAIN COMPANY B

The actions taken and orders as actually issued by Captain Company B:

1. He directs Messenger One:

"Go to the assembly area and tell Lieutenant Second-in-Command to bring the other company officers to those woods (southeast of X) and wait for me.

"Are there any questions? Repeat the message.

"Move out."

2. He confers with certain other officers before they leave the vicinity of X. He arranges a meeting with Captain Company A at bridge Y at 6:00 PM for the exchange of plans for the attack. He arranges a meeting with Captain Company D at 5:15 PM in the vicinity of X for the purpose of learning the positions and fields of fire of the heavy machine guns and the 81-mm mortars.

3. He directs the first sergeant:

"Here is a sketch given my by the battalion commander.

"Go over to the vicinity of those woods (southeast of X) and make four copies of this sketch to issue to the company officers.

"They will arrive in that vicinity in about 30 minutes.

"I am going over to that bridge (bridge Y) on reconnaissance.

"I will return within 30 minutes."

4. Taking Messenger Two with him, he moves under cover of the high ground near X to the creek to the southeast. Following the cover along this creek and Plum Creek, he proceeds to bridge Y to ascertain the amount of cover actually provided by the creek and the woods along it. He confers with the local commander of the security detachment in order to learn any additional information of the enemy and of the terrain. Captain Company B tells the latter that one of his officers will stay at the detachment command post during the night.

5. He returns to the vicinity of X by the same route, meets Captain Company D and learns some details of the latter's plan for supporting the attack. During all this time he has been making notes to assist in issuing his attack order.

6. He assembles his officers and first sergeant in the vicinity of X at 5:25 PM and issues the following oral order from notes made during his reconnaissance and conferences with other officers:

"Here is a sketch of this vicinity. Follow the sketch while I orient you. (He then orients all present, using the ground and the sketch.)

"The enemy is organizing a position to our northwest. Groups consisting of riflemen and machine guns have been located definitely in the vicinity of house T and in an orchard north of house V.

"Our security detachment is along a general line from that road junction—to the forward edge of the small woods 500 yards northwest of X.

"The battalion will attack early tomorrow morning, penetrating the hostile position up Plum Creek, capture hill 766-a and will continue the attack to the northwest. The supporting artillery will fire a thirty-minute preparation beginning at 5:35 AM. Company D, in general support, initially will fire on the position south of house T. The heavy machine guns will be in this vicinity and the mortars just

east of here. Heavy machine guns of Company M from the vicinity of that school (McCleary School) will fire on initial targets in woods Z. Company A is on our right; the 2d Battalion is on our left.

"Company B will attack up Plum Creek, capture woods Z, and continue the advance in the direction of the ford 800 yards northwest of woods Z. (See Figure 12.)

"Time: 6:05 AM.

"Formation: 1st and 2d Platoons abreast, 1st Platoon on the right.

"Direction of attack: 320 degrees magnetic azimuth.

"Left boundary: that road bend southwest of X—south edge of those small woods 500 yards northwest of X—south edge of woods Z—the ford about 800 yards northwest of woods Z.

"Line of departure: line held by security detachment. I will lead the company forward so that the scouts of the assault platoons reach this road (near X) at 5:51 AM.

"1st Platoon will attack up Plum Creek, be prepared to assist the 2d Platoon in capturing woods Z, and continue the attack to the northwest toward the ford 800 yards northwest of woods Z.

"2d Platoon will attack from those small woods 500 yards northwest of X and, assisted by the 1st Platoon, capture woods Z and continue the attack on the left of the 1st Platoon.

"Weapons platoon with the light machine-gun section leading will move by hand, following the 1st Platoon at 50 yards. These units will be prepared to go into position in the cover of Plum Creek to fire on woods Z to support the attack of the 2d Platoon or to fire toward the northwest to assist Company A.

"3d Platoon, in support, will follow the mortar section at 300 yards. It will maintain contact with Company A and the right company of the 2d Battalion. The platoon will use a maximum of three men on each flank for this purpose.

"The weapon and ammunition carrier will remain initially in those woods (pointing to company assembly area).

"Battalion aid station: those woods southeast of Y.

"I will follow the 1st Platoon in the attack.

"Are there any questions?

"It is now 5:35 PM."

7. Directs Lieutenant Second-in-Command:

"Go over to the 2d Battalion and tell the commander of the right (north) flank company of our plan for the attack.

"Find out his plans, make any necessary arrangements for coordination, and meet me in the assembly area at 7:00 PM for further instructions. I'm going to send you up to the command post of the security detachment tonight as a liaison agent."

8. Moves with Messenger One by way of the cover of the creek just east of X and Plum Creek to bridge Y, meets Captain Company A, and exchanges plans of attack with the latter.

9. Accompanied by the messenger, he then proceeds under cover of the creek east of bridge Y and the cover of the nose south of McCleary School to the vicinity of that school and locates Captain Company M. In conference with this officer, Captain Company B learns the plan of fire of the machine-gun platoons.

10. Accompanied by the messenger, Captain Company B then returns by the same route to the company assembly area.

Captain Company B arrived in the company assembly area at about 6:45 PM. He visited the platoons to assure himself that all leaders understood the orders for the attack and that administrative and supply arrangements were adequate and being carried out so as to leave the maximum amount of rest for the troops. The second-in-command returned from the 2d Battalion with the information that Company E was the adjacent unit to the south.

DURING THE NIGHT

The company commander received reports from the second-in-command that enemy troops had been heard *digging in* in woods Z and he went forward to the security detachment to verify the report. He notified battalion

headquarters of this development and requested that the artillery preparation include the forward edge of woods Z.

AT DAYLIGHT

Prior to the departure of the company from its assembly area Captain Company B notified the company officers that there were hostile troops in woods Z. A bugler from Company D joined the command group as a liaison agent from the heavy weapons company. Captain Company B personally led his company forward to the line of departure and established an observation post near Plum Creek. The command post was established nearby under cover. The second-in-command rejoined the company as it reached the line of departure.

Fifteen minutes after the jump-off—at 6:20 AM; the situation as known to Captain Company B is as follows (See Figure 13.):

1. The 2d Platoon progressed to the line of trees about 300 yards in front of the line of departure without serious opposition. Upon attempting to advance from this position it received heavy fire from woods Z and from the southwest. The platoon can now be seen halted along the general line of the trees and firing toward woods Z.

2. The 1st Platoon is halted under cover of the trees along Plum Creek just in front of the line of departure.

3. The weapons platoon is halted under cover of the trees along Plum Creek with the head of the column near the line of departure. The lieutenant has just crawled up to join Captain Company B.

4. On the right, Company A can be seen working up to the hostile position in its front under cover of smoke and artillery, mortar, and machine-gun fire.

5. The left flank connecting group is not in sight. At this time, a messenger reports to Captain Company B as follows:

"I am from the 1st Platoon.

"The platoon is halted in those woods (pointing to the small woods along Plum Creek and just in front of the line of departure).

"We are held up by two enemy machine guns in emplacements covering Plum Creek.

"The machine guns are located near the eastern edge of that point of woods. One gun is about 25 yards south of the edge of those woods and the other is about 50 yards north of those woods." (See Figure 13.)

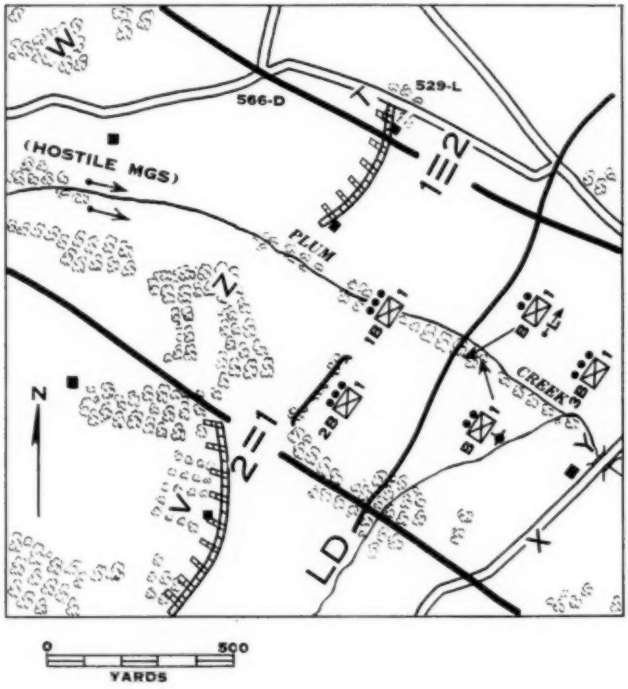


FIGURE 13.—Situation at 6:20 AM.

CAPTAIN COMPANY B

What would be the actions taken and orders as actually issued by Captain Company B to meet the situation?

DISCUSSION

The mission of the 60-mm mortar section is to silence definitely located automatic weapons which cannot be neutralized by the other company weapons. The machine guns which have stopped the 1st Platoon are suitable targets for the mortars of Company B. From positions near the line of departure observed fire can be placed on these targets.

Flanking fire by the light machine guns on the hostile position in woods Z will greatly assist the advance of the 2d Platoon. Suitable positions for the delivery of this fire are in the area occupied by the 1st Platoon.

The plans for the employment of the company supporting weapons should be sent to the leader of the 1st Platoon in order that he may take advantage of the fire to work his platoon forward. Since the 3d Platoon was directed to follow the mortar section of the weapons platoon initially, the leader of the 3d Platoon must be given new instructions in order that his platoon will be available when needed by the company commander.

THE SOLUTION OF CAPTAIN COMPANY B

Actions taken and orders as actually issued by Captain Company B:

1. Issues the following oral order to Lieutenant Weapons Platoon.

"You heard the message.

"Put your mortars in position in this vicinity and silence the machine guns holding up the 1st Platoon.

"Move your light machine guns forward to those woods (pointing to the position of the 1st Platoon) and fire on the enemy position in the eastern part of those woods (pointing to woods Z) to support the attack of the 2d Platoon.

"Any questions?"

2. Directs the messenger from the 1st Platoon:

"Tell your platoon commander that the mortar section is going into position in this vicinity to fire on those machine guns to his front. He will continue the attack under cover of the mortar fire.

"The light machine guns are going up to the present location of the 1st Platoon and fire in support of the attack of the 2d Platoon.

"Are there any questions? Repeat the message.

"Move out."

3. Directs Messenger Three:

"The 3d Platoon is back along this creek toward bridge Y.

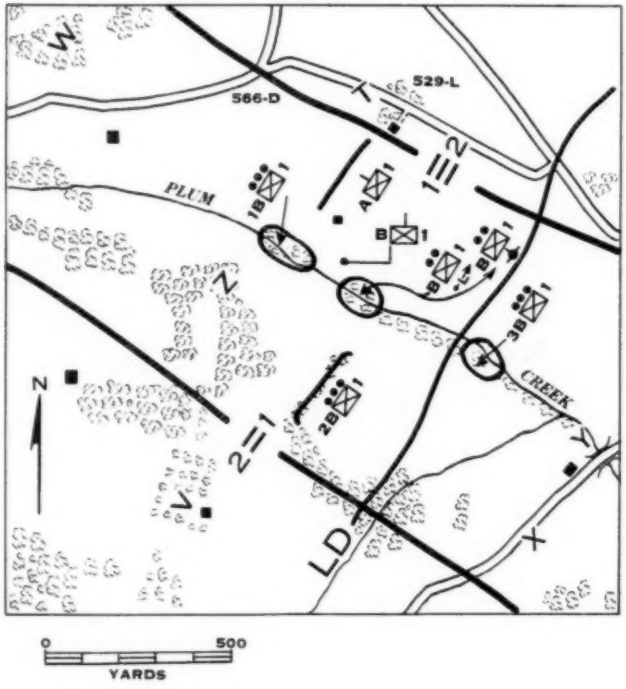


FIGURE 14.—Situation at 7:00 AM.

"Go to the platoon leader and tell him that the mortar and light machine-gun sections are going into position in this vicinity.

"The 3d Platoon will follow the 1st Platoon, which is in

those woods (pointing to the woods just to the northwest) at 400 yards.

"Any questions? Repeat the message.

"Move out."

THE ATTACK CONTINUES

Under cover of the fire of the company supporting weapons, and its own automatic rifles the 1st Platoon was able to continue its advance by working its way slowly up Plum Run. As soon as the hostile machine guns in the vicinity of the point of woods (See Figure 13) were silenced, the mortar section was moved forward to a point in the trees along Plum Creek, about 400 yards in front of the line of departure.

At 7:00 AM, Captain Company B is about 150 yards south of the house (See Figure 14) observing the action of his company. The command group is nearby, under cover of Plum Creek. The company commander is aware of the situation as follows (See Figure 14).

1. The 1st Platoon has worked its way forward to the cover of the small woods just southwest of the house where it has halted and is firing toward woods Z. Hostile machine-gun fire from the vicinity of woods W is falling in the platoon area and on the ground just to the south. Company A, on the right, has captured the hostile forward position near T and is now halted generally abreast of the 1st Platoon for reorganization.

2. The 2d Platoon is in the line of trees 200 yards southeast of woods Z.

3. The mortar section is out of action and awaiting orders under cover of Plum Creek near the company command post. The light machine-gun section is nearby, firing on the southern part of woods Z.

4. The 3d Platoon is southeast of the line of departure in the cover of Plum Creek.

5. As far as Captain Company B has been able to learn, the hostile position in woods Z consists of several combat groups located inside the woods. Earlier in the morning

Captain Company B requested artillery fire on this position. This fire is now being delivered, and will continue until the company signals for the fire to lift.

At 7:00 AM, the following message is received:

"From: 2d Platoon.

"At: Line of trees 300 yards in front of LD.

"Hour: 6:30 AM.

"Advance held up by fire from hostile position in woods 200 yards to my front and by machine guns in orchard 400 yards to my left front. 2d Battalion is stopped on LD.

"I have lost 10 men already. Request reinforcement.

A,
Lt."

The messenger, who brought this message, stated that he had been able to move under cover of the woods in rear of his platoon, thence along the creeks, to reach the command post of Company B without serious difficulty.

Corporal Agent 1st Platoon Company D arrives at the command post and reports—

"My platoon has been placed in direct support of Company B.

"Fire from out initial position has been masked and the platoon has gone out of action and is now moving forward to the vicinity of those woods (pointing to the woods 500 yards northwest of X).

"The lieutenant would like to know what fire you want."

CAPTAIN COMPANY B

What would be the actions taken and orders as actually issued by Captain Company B to meet the situation?

DISCUSSION

At 7:00 AM, Captain Company B can see that any advance by his 2d Platoon will be extremely hazardous, until the 2d Battalion has captured the vicinity of V. The 2d Battalion is apparently making very little progress. Captain Company B then looks for some other solution to his problem of capturing woods Z.

The advance of Company A has provided protection for the right flank of Company B. The 1st Platoon has been able to reach a position well on the flank of the hostile position in woods Z. Fire of company weapons and of supporting weapons is available to assist an attack from the direction of Plum Creek. Captain Company B, therefore, decides to make the main attack of his company from that direction. Since Company A is in position to support such an attack by fire, Captain Company B asks for assistance.

The eastern face of woods Z is about 300 yards long. The maximum front on which a war-strength platoon can be expected to overcome hostile resistance is 175 yards. Captain Company B decides that it will take two platoons to capture woods Z. The 1st Platoon is in position to attack; the 2d Platoon is pinned to its position by hostile fire. Captain Company B decides to commit his support platoon, even though this action will temporarily leave the company without any support echelon. In this situation, the right flank is secure and the attack will operate to increase the security of the left flank. The position of the 2d Platoon and of the supporting heavy machine guns will permit these units to assist, by fire, in the protection of the left flank during the attack. After woods Z are captured the 2d Platoon should be placed in support.

The company supporting weapons are employed from their present locations because they can satisfactorily execute their missions from the vicinity of Plum Creek. The light machine guns could probably better support the attack from positions in the zone of action of Company A. However, the ground in this zone is quite open and any unnecessary movement into this area is inadvisable. The mortars should be prepared to fire on hostile machine guns that might open enfilade fire against our attack. Such weapons must be attacked by fire immediately. Since considerable time will elapse before Captain Company B could obtain fire support through the battalion commander, he reserves the appropriate weapons under his own control for this important mission.

Captain Company B plans to utilize the fire of all available weapons to support his attack. Hostile machine guns near W are in position to enfilade the attack of Company B. By a message to the battalion commander, Captain Company B requests artillery fire in the vicinity of woods W. A request for 81-mm mortar fire to be placed on the same area is transmitted to the bugler from Company D, who is present as an agent for his company.

THE SOLUTION OF CAPTAIN COMPANY B

The actions taken and orders as actually issued by Captain Company B:

1. Calls Lieutenant Weapons Platoon and bugler Company D to join him and hear the instructions for the attack.

2. Tells Corporal Agent 1st Platoon Company D:

"Our 2d Platoon is held up in that line of trees (pointing).

"We are going to attack about 7:30 from this vicinity and capture those woods (pointing to woods Z).

"I'd like for your platoon to fire, as soon as it can get into position, on the enemy position in the eastern edge of those woods (pointing to woods Z), to support the attack."

3. Directs Messenger Two:

"You know where the 3d Platoon is located.

"Go to Lieutenant 3d Platoon and tell him to move his platoon under cover of Plum Creek to this vicinity where he will receive further orders.

"Are there any question? Repeat the message.

"After giving those orders to Lieutenant 3d Platoon, go on back to the battalion CP and deliver this message."

Captain Company B gives the following written message to the messenger:

"The 2d Platoon is held up by fire from woods Z and from the vicinity of house V.

"I am going to attack woods Z with the remainder of the company from the north at about 7:30 AM.

"Request artillery fire now on woods Z to continue until the signal to lift is given.

"Request additional artillery fire on hostile machine guns in the vicinity of woods W."

4. Tells Bugler Company D:

"We'd like to have the mortars fire on those machine guns near woods W (pointing) until we capture those woods (pointing to woods Z)."

5. Directs the messenger from the 2d Platoon:

"Return to your platoon and tell Lieutenant 2d Platoon that the company is going to attack woods Z from the north at about 7:30 AM.

"The 2d Platoon, from its present position, will support the attack by fire on the east side of those woods (pointing to woods Z). Upon the capture of woods Z the platoon will await orders in its present position in support.

"Are there any questions? Repeat the message.

"Move out."

6. Directs Messenger One:

"Company A is located right over there (pointing).

"Go to the command post of Company A and tell the captain that we are going to attack woods Z from the north at about 7:30 AM. Request Company A to support our attack by fire on the north and east edges of those woods.

"Are there any questions? Repeat the message.

"Move out."

7. Directs Lieutenant Second-in-Command:

"You know my plans.

"Meet the 3d Platoon here and give instructions to the platoon leader.

"The 3d Platoon will attack, at my command, from this vicinity at about 7:30 AM and capture the southern portion of woods Z. The 1st Platoon will attack on the right of the 3d Platoon.

"I am going up to give instructions to Lieutenant 1st Platoon and will return here by 7:30 AM."

8. Directs Lieutenant Weapons Platoon:

"You know the plans.

"Your sections will support the attack of the company from positions in this vicinity.

"The light machine guns will fire on the enemy position in the northern and eastern edges of woods Z.

"The mortars will be prepared to engage promptly hostile

machine guns which enfilade our attack from the northwest."

9. Captain Company B, accompanied by Messenger Three, then moves in the cover of Plum Creek to the location of

FIGURE 14a.—Member of Company B moves to the assault.

the 1st Platoon and gives the following order to the platoon leader:

"The 2d Platoon is stopped along those trees (pointing).

"The company will attack from this vicinity and capture woods Z.

"The 3d Platoon will attack from those woods (pointing), at about 7:30, on my order.

"Your platoon will attack from its present position, on the right of the 3d Platoon, and capture the northern portion of those woods (pointing out the portion of the woods assigned).

"The 2d Platoon will support by fire from its present position.

"Light machine-gun and mortar sections, from their present positions in those trees (pointing), will support the attack.

"I will follow the 3d Platoon in the attack.

"Are there any questions?"

10. Captain Company B, accompanied by his messenger, then returns to the attack position of the 3d Platoon and when all is in readiness, gives the order for the advance of the 3d Platoon.

SUCCESS OF COMPANY B

The attack of Company B was successful. At about 7:40 AM, Captain Company B is located just south of the house at (42.6-44.4) observing the action of his company. He has just seen the 1st and the 3d Platoons assault woods Z, capture the hostile positions along the eastern edge of these woods, and disappear into the woods. Near Captain Company B are one messenger, two buglers, Lieutenant Second-in-Command, Lieutenant Weapons Platoon, the first sergeant, Corporal Agent 1st Platoon Company D, a bugler from Company D, and the communication sergeant.

Captain Company B is aware of the following:

1. The 2d Platoon and the 1st Platoon Company D are in position in the vicinity of the line of trees 300 yards to the south. Hostile fire is sweeping the open ground in front of these units, coming generally from the west and northwest.

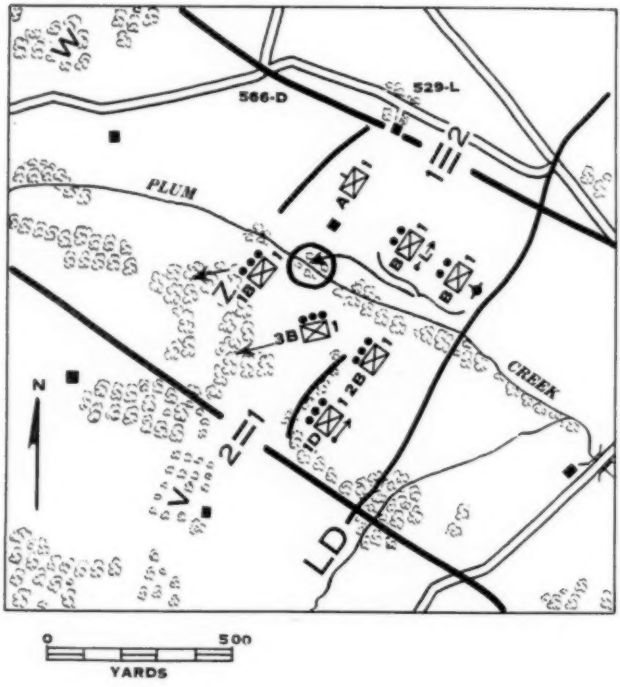


FIGURE 15.—Situation at 7:40 AM.

2. The mortar and light machine-gun sections have ceased firing but are in their assigned firing positions awaiting instructions.

3. Hostile fire from woods south and southeast of hill 766-a has stopped Company A, on the right, in a position approximately abreast of Company B. The former, in

compliance with the request of Company B, placed about one squad of riflemen and a light machine-gun squad to support the attack of Company B.

CAPTAIN COMPANY B

What would be the actions taken and orders as actually issued by Captain Company B to meet the situation?

DISCUSSION

Upon capturing the hostile position in the forward edge of woods Z, the first concern of Captain Company B should be to place his supporting weapons in position to cover the reorganization which he knows will be necessary. In this situation, the 2d Platoon and the 1st Platoon Company D are already in positions from which they can fire on counter-attacks delivered against the flanks of the assault echelon. Since the open ground in front of the positions of these platoons is swept by hostile fire, displacement forward of any portion of these platoons would have to be made under the cover of Plum Creek. Such a movement would require considerable time and would result in the temporary loss of the fires of these units. It appears to be better to have these units cover the reorganization from present positions, and to move them only when the capture of woods Z is completed. This is particularly true due to the lack of information concerning the situation existing in woods Z.

The company supporting weapons should be directed to positions from which they can assist in covering the reorganization. The light machine guns should be disposed so that these weapons can fire to protect the flanks of the company. The disposition of the mortar section presents more of a problem. The fire of the mortars will be an important aid in covering the reorganization of the company. Mortar fire, however, must be observed fire. From positions east of woods Z such fire is impossible. If the mortars are emplaced in the western edge of woods Z observed fire can be delivered to the west and southwest. Such positions would, however, lack protection from the

fire of hostile flat-trajectory weapons. The vicinity of the clearing in woods Z offers positions with protection from hostile flat-trajectory fire. Observation of fire delivered toward the west or southwest is difficult. However, by employing one member of the squad as an observer, satisfactory results can be obtained from the mortars. In the circumstances, positions in the vicinity of the north end of the clearing in woods Z offer the best solution to the problem.

Captain Company B is not justified in any assumption that the battalion commander is in a position to observe the action of his assault companies. The company commander must report important changes in the situation. It is to be noted that Captain Company B, in his message at 7:20 AM, reported only as much as he knew of the situation; that is, that the forward hostile position was captured.

THE SOLUTION OF CAPTAIN COMPANY B

Actions taken and orders as actually issued by Captain Company B—

1. In the presence of the representatives of Company D, directs Lieutenant Weapons Platoon:

"Have one light machine-gun squad follow the 1st Platoon through those woods (pointing to woods Z) and go into a position from which it can fire along the north edge of the woods to protect the right flank of the company.

"Have the remainder of the light machine-gun section follow the 3d Platoon to the southeast corner of those woods (pointing to woods Z) and go into positions from which it can fire along the south edge of the woods to protect the left flank of the company.

"Have the mortar section go into position near the north edge of the clearing in those woods (pointing to woods Z) prepared to fire on hostile machine guns located southwest of woods Z.

"As soon as you are in position, reorganize your sections and promptly report your strength and the ammunition situation.

"I will follow the right of the 3d Platoon.

"Any questions?"

2. Directs Messenger Three:

"Go to the 2d Platoon at those trees (pointing) and tell the platoon leader to remain in his present position, prepared to protect the company by fire along the south edge of woods Z.

"Tell the platoon leader to request 1st Platoon Company D to assist him.

"Any questions? Repeat the message.

"Move out."

3. Asks Corporal Agent and Bugler Company D—

"Do you understand the plan?"

4. Directs Messenger Two:

"Tell the battalion commander that we have captured the enemy forward position in woods Z.

"Any questions? Repeat the message.

"Move out."

5. Organizes the command group, consisting of the second-in-command, first sergeant, communication sergeant, and two buglers into a patrol and, accompanied by representatives of Company D, follows the right of the 3d Platoon into woods Z in order to determine the situation and to regain control of his company.

A MESSENGER REPORTS

As Captain Company B moves through woods Z, a messenger reports to him:

"I am from the 1st Platoon.

"The lieutenant told me to report that the platoon is along the west edge of these woods."

Taking this messenger and his own command group with him, the company commander moves on through woods Z and locates a group of about 20 men from the 3d Platoon in the southeast corner of the woods, just east of the clearing. A sergeant reports:

"The lieutenant was killed during out assault.

"I have just taken command. This bunch is all of the platoon I have located. We have lost contact with the 1st Platoon."

CAPTAIN COMPANY B

What would be the actions taken and orders as actually issued by Captain Company B in reorganizing his company?

THE SOLUTION OF CAPTAIN COMPANY B

The actions taken and orders actually issued by Captain Company B—

1. He directs Lieutenant Second-in-Command:

"You know the situation.

"Take command of this platoon.

"Get some men out at once to the south to cover your platoon.

"Gain contact with the 1st Platoon at once.

"You heard my orders to Lieutenant Weapons Platoon.

"Reorganize promptly and get ready either to continue the attack on my order or to assist Company E.

"I will be in the woods near that corner of the clearing (pointing to the northeast corner of the clearing in woods Z).

"Any questions?"

2. Accompanied by the 1st Platoon messenger, the communication sergeant, the first sergeant, two buglers, Corporal Agent and bugler Company D, he moves to the northeast corner of the clearing in woods Z and directs the first sergeant to establish the command post.

3. He notifies the first sergeant:

"I am going to visit the 1st Platoon.

"I'll return in about 15 minutes."

4. Accompanied by Bugler One and the 1st Platoon messenger, he moves through the woods to the northwest corner of woods Z, where he locates the 1st Platoon. After learning of the situation, he directs Lieutenant 1st Platoon:

"Hold the north and west edges of the woods and protect the right flank of the company.

"That light machine-gun squad (pointing) will assist you.

"The 3d Platoon is over in the southeast corner of woods Z and has been instructed to gain contact with you.

"Reorganize promptly, prepared to continue the attack or to assist Company E. I'll give you further orders in a few minutes.

"I will be at the northeast corner of that clearing in woods Z.

"Any questions?

"I have returned your messenger."

5. Accompanied by the bugler, he moves to the north edge of woods Z, inspects the position occupied by the light machine-gun squad, and checks to see that contact is being maintained with Company A on the right.

6. Accompanied by the bugler, he moves to the southern part of woods Z.

REQUEST FOR HELP

At about 8:20 AM, Captain Company B is near the south edge of woods Z observing the situation on the left flank of his company. He can see artillery and mortar fire falling on the eastern part of the woods just south of Z. A group of about 30 hostile riflemen is seen to leave the western part of the woods just southwest of Z and, supported by machine-gun and light machine-gun fire, advance toward woods Z. The fire of Company B breaks up this counter-attack. The enemy riflemen withdraw into the western part of the woods 400 yards northwest of house V.

At this time, a message, accompanied by a sketch, is received from Company E. The sketch is lettered by Captain Company B to correspond to the lettering shown on Figure 12. The message is as follows:

"We are stopped by fire from the hostile position near house V.

"We resume the attack at 8:40 AM to capture the vicinity of that house.

"Request that you assist us by advancing from woods Z at 8:40 AM, capturing the woods about 300 yards northwest of house V, and from those woods assist our advance by fire.

"Our artillery and mortar fire will lift from those woods at 8:40 AM."

CAPTAIN COMPANY B

The decision of Captain Company B at 8:20 AM for the employment of his company.

DISCUSSION

Prior to receipt of the request for assistance from Company E, Captain Company B had considered the advisability of giving his neighbor such aid. In the orders for the reorganization, subordinates in Company B were told to be prepared to continue the attack toward the northwest or to assist Company E. Until the latter is in possession of the orchard in the vicinity of house V, any advance of Company B from woods Z will present complications. The 2d Platoon is not immediately available to the company. A flank protecting group should be left in woods Z to protect the right flank of the company. Therefore, any advance northwest of woods Z will be made by a force of about one platoon, supported by the company mortars and light machine guns.

Considerable time will be required for the reorganization of the company. Captain Company B has no central point from which he can observe the action of the company and the situation on the flanks. He is thus forced to visit the platoons and weapon sections and to go to points in the edge of woods Z in order to observe to the front and flanks. From information received by these actions, he will come to a decision and issue orders for the operations of the company subsequent to its reorganization. Before the decision of Captain Company B is announced, the request from Company E arrives. This request simplifies the problem of Captain Company B by providing for a coordinated attack by Companies B and E, with the lifting of friendly artillery and mortar fire from the woods just southwest of Z. Since the capture of the vicinity of house V will further the advance of Company E and also greatly facilitate the future action of Company B, the commander of the latter unit decides to give the assistance requested.

The plan of Captain Company B is not called for. One of the essentials of such a plan is the utilization of all available supporting weapons, including those in support of the attack of Company E. Captain Company B would also inform his battalion commander of his decision; if time were available, he would request authority of the battalion commander for his action. In this case, time to receive such authority is not available; Captain Company B decides, on his own initiative, to assist Company E and thereby simplify the advance of his own unit by removing a flank threat to the advance from woods Z.

THE SOLUTION OF CAPTAIN COMPANY B

Captain Company B decides at 8:20 AM to attack toward the south from woods Z at 8:40 AM, with the 3d Platoon in assault and capture the woods just south of woods Z in order to assist, by fire from that vicinity, the attack by Company E.

CHAPTER 4

The Rifle Battalion in Attack

(Illustrative Problem)

(AN INFANTRY SCHOOL TEACHING)

This chapter is an illustrative problem designed to show the use of all infantry weapons of a rifle battalion, reinforced by light tanks and chemical mortars and supported by artillery and antitank guns. It starts with the receipt of the regimental orders for the attack. It illustrates how the battalion commander controls and coordinates his attacking team, what happens when resistance is encountered and how he influences the conduct of the attack by the control of his organic units and weapons, the use of his supporting units, and finally the actions of his reserves.

SITUATION

During the daylight hours of 6 May a Blue force, which had been advancing south, encountered hostile covering detachments north of the First Division Road. By 3:00 PM, this force had driven in the outpost and developed a Red defensive position as indicated on Figure 16. At that time, the Blue commander decided to renew the attack the following morning. The 29th Infantry, an interior assault unit of this Blue force, had elements of its 3d Battalion occupying positions generally along the First Division Road when the attack was suspended. The 3d Battalion had one caliber .50 machine gun in position along the First Division Road south of Davis Hill and one gun in position near the same road on Riley Ridge protecting its front lines against tanks.

The regimental order for the attack to be launched at 5:50 AM, 7 May, was issued at 4:25 PM, 6 May. Extracts from the order follow:

* * * * * * *

"The 1st Battalion 83d Field Artillery, reinforced at 5:50 AM by the fire of a medium howitzer battery, supports the regiment. It fires a 30-minute preparation, the bulk of which will be on the hostile front-line positions. After 5:50 AM, support will be by successive concentrations. See Annexes Nos. 6 and 7 of the 1st Battalion 83d Field Artillery. Annex No. 6 shows the prepared fires singly and in groups. (Figure 17 shows an extract of Annex No. 6 to include the prepared fires in the zone of action of the 1st Battalion 29th Infantry.) Annex No. 7 is the plan for the progression and lifting of fires. (Figure 18 shows an extract of Annex No. 7 containing the plan for lifting fires in front of the 1st Battalion.) Fire on the hostile positions on Davidson Hill, Riley Ridge and * * * will be maintained until 6:00 AM at which time it will lift to the tactical areas further south.

"This regiment, with Company A 66th Infantry (Light Tanks) and 1st Platoon Company C 2d Chemical Regiment, attached, will renew the attack at 5:50 AM, 7 May, with the 1st and 2d Battalions in assault, 2d Battalion on the right, and seize the high ground along the line: Smith Hill—Wells Hill.

"For line of departure and zone of action of the 1st Battalion: see Situation Map.

"Company M, less Mortar Platoon and Caliber .50 Machine-Gun Platoon will fire on the western slope of Davidson Hill from positions on Ebbert Hill, beginning at 5:45 AM. When its fire is masked it will shift its fires to Riley Ridge. Upon the capture of Riley Ridge it will revert to the control of its battalion.

"The Antitank Platoon will protect the line of departure. Upon the capture of Davidson Hill, it will displace one section thereto and protect against tanks from the east and from the 7th Infantry Woods. Upon the capture

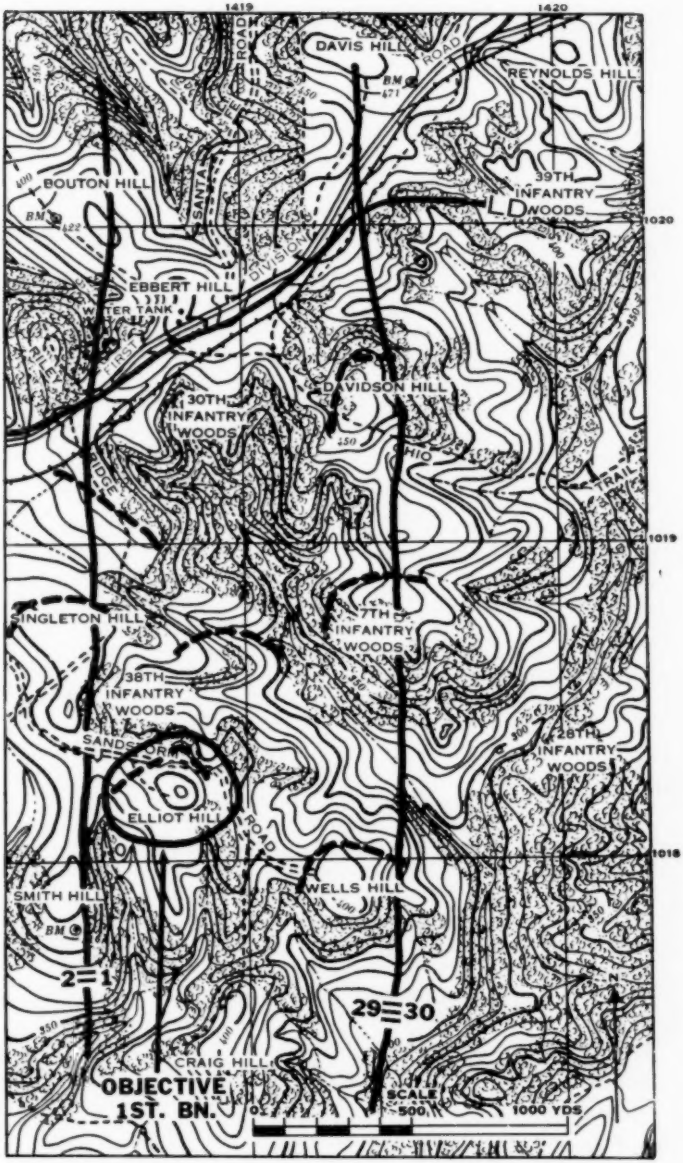


FIGURE 16.—Situation Map, 1st Battalion 29th Infantry.

of Riley Ridge, it will displace one section thereto and cover approaches from the direction of Singleton Hill.

"The 1st Platoon Company C 2d Chemical Regiment and Company A 66th Infantry (Light Tanks) are attached to the 1st Battalion.

"The 2d Battalion * * *.

"The 1st Battalion making its principal effort on the left, will pass through the 3d Battalion, seize Elliot Hill and be prepared to assist in the capture of Smith and Wells Hills."

* * * * * * *

ACTIONS OF LIEUTENANT COLONEL 1ST BATTALION 29TH INFANTRY

The battalion commander received the regimental attack order at 4:25 PM. This order was issued early enough for him to make his own reconnaissance and to send instructions to the company and attached unit commanders and staff officers to assemble near the crest of Ebbert Hill to receive the preliminary attack order at 5:30 PM. The company and other unit commanders would then have time to make their personal reconnaissance and issue their preliminary instructions during the hours of daylight.

It is now 4:45 PM, 6 May. Lieutenant Colonel 1st Battalion and his reconnaissance party have moved to a point on Ebbert Hill from which the battalion zone is visible. The battalion commander studies the terrain to his front and uses his map and aerial photographs to assist in securing a complete understanding of the terrain. From near the crest of Ebbert Hill the party faces almost due south. The road to his immediate front is the First Division Road. The trail to the right is the Ohio Trail. To the left front, about 400 yards distant is the crest of Davidson Hill. To the right front, about 450 yards away, is Riley Ridge. The outlines of the enemy positions are visible at those two places. On beyond Davidson Hill, approximately 900 yards to the left front are the 7th Infantry Woods. To the right of the 7th Infantry Woods is the eastern nose of Singleton

Hill. On beyond is Elliot Hill, about 1500 yards straight to the south. That hill is the objective for the 1st Battalion. On beyond Elliot Hill is the forward slope of Wells Hill.

A study of the terrain indicates that troops should advance faster in the left half of the 1st Battalion's zone of action because of covered approaches and suitable terrain for observation. With this decision made, the battalion commander can better plan his supporting fires.

Prior to formulating the battalion plan the commander briefly reviews the tactical situation.

By 3:00 PM this afternoon the Blue force had developed a Red defensive position as indicated on Figure 16. When the attack was suspended the regiment had elements of its 3d Battalion generally along the First Division Road.

The 1st and 2d Battalions are now in assembly positions north of Ebbert Hill. The 1st Battalion 83d Field Artillery is to support the attack of the regiment and a company of light tanks and a chemical platoon have been attached to the 1st Battalion. The regiment is to attack with the 1st and 2d Battalions in assault, 2d Battalion on the right, and seize the line: Smith Hill—Wells Hill, an objective some 1800 yards to the front; the heavy machine guns of Company M have been ordered to assist in the initial attack by the 1st Battalion. The directions to the 1st Battalion are brief indeed. It will pass through the 3d Battalion at 5:50 AM, make its principal effort on the left, seize Elliot Hill, and be prepared to assist in the capture of Smith and Wells Hills.

As the battalion commander prepares notes for his attack order certain tactical principles should be kept in mind. In the first place a line of departure has been prescribed by the higher commander. A suitable line of departure should be a terrain feature that can be easily recognized on the ground; it should have cover close in rear, and should be a line which our own troops can reach without fighting. The line of departure in the regimental order seems to fulfill all of these requirements; therefore, it should be the one used by the

battalion. If it appeared unsatisfactory, the battalion commander might pick another one in rear, provided the advance elements of his battalion were able to cross the line given by the higher commander at the specified time.

The boundary line defining the zone of action is shown on the situation map. However, the regimental commander has said nothing about the formation the 1st Battalion is to adopt during the attack. Lieutenant Colonel 1st Battalion has, of course, three formations which he might employ. He might attack with one, two, or three companies in assault. Which formation should he adopt? The battalion zone of action is wide—extending from the crest of Riley Ridge about one thousand yards eastward to the top of Davidson Hill—too wide to be covered by one company. The enemy has organized two separate and distinct localities within this zone. It would appear that at least two companies should be used initially. Why not use all three rifle companies initially? A further study of the map and the terrain discloses that the battalion has been ordered to make a rather deep attack. This should indicate that a strong reserve will be needed to furnish continuity of effort to the attack. Therefore, the battalion commander decides to place two rifle companies in assault and one in reserve.

The bulk of the support fires should be used to assist the main attack. The direction of this attack has been specified by Colonel 29th Infantry. In addition, the regiment has ordered the heavy machine guns of Company M to fire on the western slope of Davidson Hill—to further the main attack of the 1st Battalion.

The battalion commander was furnished copies of the two annexes to the artillery attack plan showing the details of artillery support. (*NOTE*: For complete details as to the practical application of these plans see Chapter 8, Artillery Support.)

The battalion commander must first decide on his scheme of maneuver and then decide how to use his support fire units, his heavy weapons company, his attached light tank company and chemical platoon. The scheme of maneuver must be decided upon before he can make intelligent

requests for artillery fire to support his attack. In connection with the attached tanks, Lieutenant Colonel 1st Battalion should remember that, ordinarily, we do not attach tanks to a battalion until definite need for them arises. Should they be used initially in this situation? Ordinarily they should. However, the battalion commander believes he can capture his first intermediate objective without them. We will see what happens.

The reserve should be located under cover if possible and should be placed so as to favor its use with the unit making the main attack. In units the size of a battalion, availability takes precedence over concealment. In other words it should be where the battalion commander can use it in a minimum of time.

SITUATION, CONTINUED

All battalion staff officers, company commanders and commanders of attached units reported to the battalion observation post on Ebbert Hill shortly before 5:30 PM. They were carefully oriented as to all visible terrain features, the location of known enemy works and the provisions for supporting weapons. At 5:30 PM they reported to the battalion commander.

Lieutenant Colonel 1st Battalion: "You have all been oriented as to the terrain, the enemy situation and our supporting weapons. The battalion attack order will be issued here at 3:00 AM. I will now give you the battalion plan of attack so that you may make your reconnaissances and plans during the remaining hours of daylight." The battalion commander then dictated his plan to include time of attack, boundaries, company zones of action, designation of assault and reserve companies, plans for the heavy weapons company, the chemical platoon and the tank company.

"Gentlemen, this is Lieutenant 'X', the liaison officer from the 1st Battalion 83d Field Artillery. He will explain to you the artillery plan of supporting fires for this battalion."

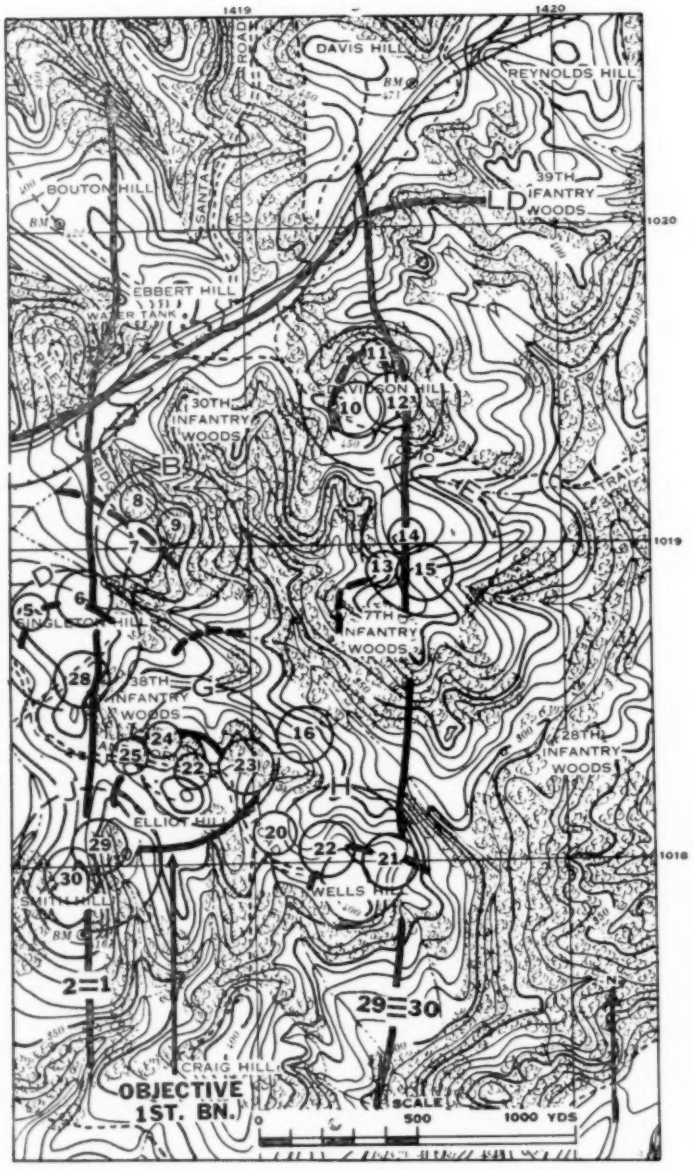


FIGURE 17.—Prepared artillery fires in support of 1st Battalion.

Artillery Liaison Officer: "The enemy situation in your front is fairly well known. The infantry regimental commander has decided that there will be a thirty minute artillery preparation, especially on the first two intermediate objectives—Davidson Hill and Riley Ridge. This decision informs us that there is suitable information as to known objectives for artillery fire and that a supply of ammunition for this fire is available. This preparatory fire will inform the enemy of our impending attack, but we are an interior unit; we have been in contact for some time and the enemy is all set for a renewal of our attack.

"After the initial preparatory fire we shall support the attack by successive concentrations. The plan for lifting the artillery fires is shown in Annex No. 7 (See Figure 18). This annex shows that the artillery fires on the groups of concentration areas placed on the known enemy positions on Davidson Hill and Riley Ridge will start at H minus 30 minutes and continue until H plus 10 minutes. The hour for the attack (H hour) has been given you as 5:50 AM. Hence, the artillery fires on the forward enemy positions will start at 5:20 AM and continue until 6:00 AM. At 6:00 AM the artillery fires will lift to the groups of concentration areas next to the south. The regimental order as brought out by Annex No. 7 expects that the first intermediate objectives for this battalion will be captured in the first ten minutes of the attack.

"During an attack infantry units will frequently encounter unexpected enemy resistance, such as machine guns that have not been silenced by the supporting weapons; they will suffer casualties, some disorganization, loss of direction and depletion of ammunition. These causes will force the attacking infantry to halt, temporarily, for the purpose of reorganizing its units and its supporting fires. For these reasons it is impracticable for the infantry to follow the artillery on a time schedule. Prearranged concentrations must be fired and lifted on signal or call from the infantry companies.

"After the first initial lift of the artillery fire, which is on

CP 1st Bn 83d FA

(Date and time)

ANNEX 7

TO ATTACK PLAN 1st Bn/83d FA

PLAN FOR LIFTING FIRES

EXTRACT

* * * * *

Group	Time to be fired	Lift to be regulated by
B C	H-30 to H-10	Time
D	H-30 to signal or call to lift.	2d Bn
E	H-15 to signal or call to lift.	1st Bn
G	H-15 to signal or call to lift.	1st Bn
H	H-15 to signal or call to lift.	1st Bn
J	After lift from G to H to signal or call to lift.	1st or 2d Bns
I	After lift from E to signal or call to lift.	1st Bn

Pyrotechnic signals for lifting fires:
By 1st Bn 29th Inf: Signal, ground, red-chain parachute.
H is the hour set for the attack.

FIGURE 18.—Artillery plan for lifting fires in zone of 1st Battalion.

a time schedule, the rifle company commanders must furnish the artillery with the proper signal at the time when they wish the artillery fire to be lifted from the area immediately to their front."

Lieutenant Colonel 1st Battalion: "Are there any questions? It is now 5:52 PM. Everyone report to me here at 3:00 AM."

BATTALION ATTACK ORDER

It is now 3:01 AM, 7 May. We are at the command post of the 1st Battalion 29th Infantry. Present with Lieutenant Colonel 1st Battalion are certain members of the battalion staff, the four company commanders, as well as Captain Company M, Captain Company A 66th Infantry, Lieutenant 1st Platoon Company C 2d Chemical Reigment, and the liaison officer from the 1st Battalion 83d Field Artillery. These officers have been advised of any changes in the situation occurring during the night, issued operation maps, and are ready to receive the attack order.

Lieutenant Colonel 1st Battalion: "Copy this order. You know the situation.

"The rocket signal for lifting artillery fire will be the red-chain parachute flare fired by the company in whose zone of action the fire is located.

"This battalion, passing through the 3d Battalion, will seize Davidson Hill and Riley Ridge and continue the attack in the direction of Elliot Hill.

"Time of attack: 5:50 AM.

"Line of departure, zone of action, and final objective for the battalion: see map.

"Formation: Companies A and B in assault, Company A on the right.

"Company A, from positions just west of the Ohio Trail on Ebbert Hill and near the line of departure, will fire on Riley Ridge commencing at 5:50 AM. Upon the capture of Davidson Hill by Company B, Company A will seize Riley Ridge and continue the attack in the direction of the eastern nose of Singleton Hill.

"Company B, crossing the line of departure northeast of the Ohio Trail on Ebbert Hill at 5:50 AM, will seize Davidson Hill and continue the attack in the direction of the 7th Infantry Woods.

"Company D will support the attack as follows:

1. 1st Platoon and 2d Platoon (less one section), in general support, from positions on the south and west

slopes of Davis Hill, will fire initially on the hostile positions on the north and west slopes of Davidson Hill, commencing at 5:45 AM. Upon the capture of Davidson Hill, it will place the 1st Platoon in direct support of Company B and the 2d Platoon (less one section) in direct support of Company A. One section from positions on Davis Hill will have as its primary mission the protection of the battalion against hostile aircraft.

2. The 81-mm Mortar Platoon, in general support, from positions on the north slope of Ebbert Hill, will fire on the hostile position on Davidson Hill, commencing at 5:45 AM. It will be prepared to shift its fires to Riley Ridge on my order.

3. The caliber .50 Machine-Gun Platoon will remain in position of readiness north of Ebbert Hill. Upon the capture of Davidson Hill it will displace thereto and protect against tanks from the south and east. It will follow the attack and take positions on the nose east of Singleton Hill.

"Company A 66th Infantry (Light Tanks) arriving after the artillery preparation begins and not later than 5:50 AM, will await orders in the woods northeast of Ebbert Hill.

"The 1st Platoon Company C 2d Chemical Regiment, from positions in the draw just west of Ebbert Hill, will smoke the enemy position on Riley Ridge upon request of Company A.

"Company C will take position in the draw 250 yards northeast of Ebbert Hill in reserve. It will maintain contact with the 2d Battalion and the 30th Infantry.

"CP—In draw 300 yards north of Ebbert Hill.

"OP—Ebbert Hill.

"Any questions?"

Captain Company A: "If we need artillery fire in our zone, shall we report it to the command post or to your observation post?"

Lieutenant Colonel 1st Battalion: "Report all such requests to my observation post. I will be there most of the time and so will the artillery liaison officer."

Captain Company B: "What about those ground signals for lifting artillery fire? I am sure I have no such thing in my company."

Lieutenant Colonel 1st Battalion: "The flares will be issued companies before the attack. Any other questions? It is now 3:20."

DISCUSSION

This order was more or less in the nature of a confirmation of what the battalion commander had included in his plan and which was given the officers on the afternoon of 6 May. However, it is considered advisable to again assemble the officers so that any points not understood might be cleared up and to permit any necessary changes. This was a dictated order. The usual battalion practice will be to issue an oral order. However, if time permits a dictated order is obviously better.

The order states that Lieutenant Colonel 1st Battalion has placed the fire of three sections of heavy machine guns and of the mortars on Davidson Hill in support of his main attack. The fact that no battalion supporting fires are to be placed, initially, on Riley Ridge is sufficient reason for directing Company A to attack by fire only. However, Lieutenant Colonel 1st Battalion has provided supporting fires for Company A, after his main attacking unit has captured Davidson Hill. (In addition, the regimental commander provided supporting fires for Company A by ordering the heavy machine-gun platoons of Company M to support the attack of Company A, after the capture of Davidson Hill.) One section of heavy machine guns have been given the primary mission of protecting the battalion against hostile aircraft. This section will take positions for all-around fire.

Lieutenant Colonel 1st Battalion, knowing that the dispositions of the guns of the Antitank Platoon protect his flanks, is able to hold his caliber .50 machine guns in a position of readiness. Initially he holds them north of Ebbert Hill. Upon the capture of Davidson Hill, he will

want immediate protection against tanks from the southeast.

We shall now advance the time until 5:44 AM which means that the artillery preparatory fire has been falling for twenty four minutes and it is about time for the machine guns and the mortars to open fire on Davidson Hill.

SITUATION, CONTINUED

At this time Lieutenant Colonel 1st Battalion, with certain members of his staff, Captain Company A 66th Infantry, Captain Company D, the liaison officer from the artillery, and messengers, are at the battalion observation post on Ebbert Hill.

Executive and Operations Officer: "Well, in just a few minutes old Company B will start after that hill (pointing to Davidson Hill). I wonder how they will fare?"

Lieutenant Colonel 1st Battalion: "They should get along all right if all that dust over there means anything. However, you never can tell. I suspect that that hill is a regular hornet's nest of machine guns. Unless we have knocked them all out they will still cause plenty of hell for anyone who tries to advance through those woods."

The attack is launched at 5:50 as ordered. At this time Company A opens fire on Riley Ridge and at the same time advance units of Company B cross the line of departure some 200 yards east of the Ohio Trail on Ebbert Hill.

A few minutes later.

Lieutenant Colonel 1st Battalion: "Something seems to be wrong over there in front of Company B. Can you see those men taking cover behind that railroad track? They don't seem to be advancing. I suppose some of those damn Red machine guns are still on that hill. Artillery liaison officer, you are still firing on that hill?"

Artillery Liaison Officer: "Yes, we will be firing there for a few more minutes. At 6:00 AM we will lift to the tactical areas further south."

Lieutenant Colonel 1st Battalion: "It looks to me that this is a chance to do a little anticipating. I would like for the artillery to continue on Davidson Hill and on Riley Ridge until signal to lift."

Artillery Liaison Officer: "Sir, on what part of Davidson Hill do you want the fire concentrated?"

Lieutenant Colonel 1st Battalion: "Executive, where is that artillery annex showing the prepared fires? (Is handed the annex and studies same.) Place the bulk of your fire on prepared concentrations 10 and 11."

Artillery Liaison Officer: "Very well, I will transmit that request at once."

Executive and Operations Officer: "Colonel, here is a messenger from Company B."

Lieutenant Colonel 1st Battalion: "Well, what is it?"

Executive and Operations Officer: "Sir, the message reads: 'Our company has been stopped along the north edge of the woods on Davidson Hill. Heavy machine gun fire being received from right of enemy position. We cannot move forward.' ".

Lieutenant Colonel 1st Battalion: "All right, have the messenger remain here for a few minutes; I will want to send a message back by him. What do you think of that, S-3?"

Executive and Operations Officer: "Looks like it is about time to throw in the reserve."

Lieutenant Colonel 1st Battalion: "Captain, I feel sure you should be returned to the Infantry School for another course in tactics. Didn't they tell you to use your reserves only after you had exhausted all other means of advancing the attack, or when you can employ it to outflank resistance holding up the assault echelon? To put in the reserve over there would simply clutter up the landscape and do no good. I have a better idea. Where is Captain Company A 66th?"

Captain Company A 66th Infantry: "Here, sir."

Lieutenant Colonel 1st Battalion: "It looks like our advance planning is going to help. How long will it take you

to get your company up to the line of departure down there by Company B?"

Captain Company A 66th Infantry: "I can be there in about 15 minutes."

Lieutenant Colonel 1st Battalion: "Very well, move your company forward, cross the line of departure about 200 yards east of this point at 6:20 and attack Davidson Hill. Your advance will be followed closely by Company B. Upon capture of Davidson Hill, assemble north of the First Division Road. I will inform Company B. Is that clear? Move out."

"Executive Officer, send a message to Company B. Tell the company commander that the tanks will cross the line of departure just in rear of his position at 6:20 AM and assist him in the capture of Davidson Hill. Tell him to signal the artillery when to lift. Also send a message to Company A. Tell the company commander of the situation. No change in his orders."

"Captain Heavy Weapons Company, continue mortar fire on Davidson Hill until 6:20. Then shift to Riley Ridge and fire there until masked. Is that clear?"

Captain Heavy Weapons Company: "Yes, sir."

Lieutenant Colonel 1st Battalion: "Get the dope back to the old man before he starts yelling."

Executive and Operations Officer: "Yes, sir."

DISCUSSION

You have heard the battalion commander's plan for the renewal of the attack—to use the attached tank company to assist Company B in the capture of its initial objective. We see now that Lieutenant Colonel 1st Battalion may not have decided correctly about using the tanks initially.

It is now 6:18 AM, just two minutes before the attack is to be renewed. The tank company is approaching the line of departure. Company D with machine guns and mortars, the artillery, and the heavy machine guns of Company M are all firing on the enemy position on Davidson Hill. The machine guns will cease fire on this enemy

position when their fire is masked. The mortar platoon has been directed to shift to Riley Ridge at 6:20 AM and the artillery will lift on signal from Company B.

As the tank unit crossed the line of departure a red-chain parachute flare was seen above the location of Company B. The artillery fire then lifted from Davidson Hill and began falling in the 7th Infantry Woods. Artillery fire continued to fall on the concentration areas on Riley Ridge. The 81-mm mortar platoon switched its fires to targets on Riley Ridge at 6:20 AM. As the advancing tanks masked the fires of Company M, its machine guns began searching out the enemy in his position on Riley Ridge.

From his observation post the battalion commander was able to observe the renewal of the attack by the tank company closely followed by Company B. The continued fire of the artillery, the 81-mm mortar platoon and the heavy machine-gun platoons until 6:20 AM, together with the power of the tank attack enabled Company B to over-run the position.

This is one method a battalion commander can adopt to assist the further advance of an assault company.

One platoon (less one section) of heavy machine guns quickly went out of action on the southern slope of Davis Hill, moved under cover to Ebbert Hill and reported to Company A in direct support. They went into action immediately, firing on the enemy position on Riley Ridge. Company A, the right assault company of this battalion, had been ordered to seize the enemy position on Riley Ridge as soon as Company B captured Davidson Hill, and the attached chemical platoon had been ordered to smoke Riley Ridge upon request of Company A. These steps were taken by the battalion commander to aid Company A by shifting the battalion supporting fires to the enemy position in front of that company. In other words, to get the full benefit of support fires, the battalion commander is moving his battalion forward in somewhat of a shouldering process. One part has moved forward, covered and aided by the fires of all the other parts. Now he is reversing the process and bringing up the part left behind.

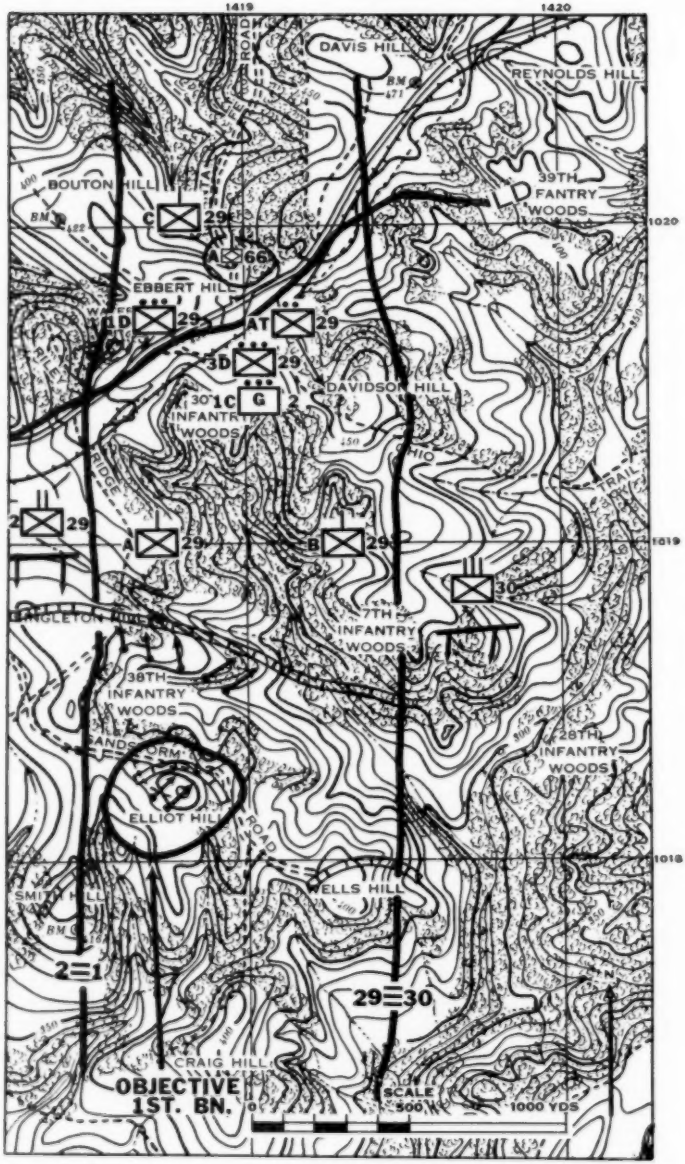


FIGURE 19.—Situation Map, 1st Battalion 29th Infantry at 7:45 AM.

The battalion commander and staff now observe the attack on Riley Ridge by Company A 29th Infantry aided by the 1st Platoon Company C 2d Chemical Regiment. They witness the tatical dispositions and watch the company advance its own attack by a combination of fire and movement (main and holding attack) just the same as a larger unit. The forward movement is made possible by the use of smoke to provide concealment where none naturally exists.

ARRIVAL OF BATTALION COMMANDER AND PARTY ON DAVIDSON HILL

At 7:45 AM Lieutenant Colonel 1st Battalion, accompanied by his Executive and Operations Officer, his Intelligence Officer, Captain Company D, and messengers, arrive on the forward slope of Davidson Hill. This is the new observation post of the battalion. A telephone detail from battalion headquarters is moving a wire line forward and will install a telephone.

Lieutenant Colonel 1st Battalion: "This is a fine place to see what is going on to the front. I can see that Company A is already moving forward towards Singleton Hill. We are in plain view of the eastern nose of Singleton Hill, and on beyond that I can see our objective—Elliot Hill. By the way, Executive, where are our support and attached units now?"

Executive and Operations Officer: "Company C is in the head of that draw over there north of Ebbert Hill. The tank company is in an assembly position back there just north of the First Division Road. It suffered three casualties in the attack on Davidson Hill. The chemical platoon is moving forward and now is in the head of that draw about 300 yards west of here. Company D still has one caliber .30 machine-gun platoon in direct support of Company B and one platoon (less a section) in direct support of Company A. One section is displacing to this hill for defense against aircraft. The Mortar Platoon is in position west of Ebbert Hill. The caliber .50 Machine-Gun Platoon

and one section of the Antitank Platoon are displacing to positions on this hill. Company M has reverted to its battalion."

Lieutenant Colonel 1st Battalion: "Any dope on the 30th Infantry on our left and the 2d Battalion on our right?"

Executive and Operation Officer: "Yes, on our right, the 2d Battalion is moving up the northern slope of Singleton Hill and the right elements of the 30th Infantry, on our left, are down there by the 7th Infantry Woods, about on line with Company B, at least where I assume Company B is."

Lieutenant Colonel 1st Battalion: "All right, that's pretty good. Let's try out the Intelligence Officer and see what he knows."

Intelligence Officer: "Sir, the enemy line now runs across Singleton Hill, along the nose east thereof and through the 7th Infantry Woods. The Reds have more machine guns on that nose east of Singleton Hill than Carter had oats. We are going to have trouble there."

Lieutenant Colonel 1st Battalion: "Very good. Now let's do a little figuring."

The artillery liaison officer and his party followed by Captain Company A 66th Infantry now arrive on Davidson Hill.

Lieutenant Colonel 1st Battalion: "Artillery Liaison Officer, where is the artillery firing in my zone?"

Artillery Liaison Officer: "We are now firing on Elliot, Smith, and Wells Hills."

Lieutenant Colonel 1st Battalion: "Very good for the present."

At this time two messengers arrive at the observation post. Each hands a message to the executive officer.

Executive and Operations Officer: "All right, remain here for the present. We may have a message for you to take back. Colonel, these messages are from our two assault companies. The one from Company A states that the company is held up on the southern slope of Riley Ridge by enemy machine guns located on the eastern nose of Singleton Hill. The one from Company B states that

the enemy is apparently withdrawing from the northern edge of the 7th Infantry Woods but that the company cannot advance because of machine-gun fire directed across its front from the enemy position on the eastern nose of Singleton Hill and from the crest of Elliot Hill."

Intelligence Officer: "Didn't I say we would have a hell of a time with those machine guns at that place?"

Lieutenant Colonel 1st Battalion: "Not in exactly those words. Let me see those messengers. Here, messenger from Company A, point out the enemy machine guns that are holding up your company."

Messenger from Company A: "Sir, I didn't see nothing. I was too close to the ground."

Lieutenant Colonel 1st Battalion: "Messenger from Company B, can you point out the machine guns that are holding up your company?"

Messenger from Company B: "Yes, sir, they are on that nose about 600 yards down there and on that redfaced hill over yonder." (Messenger points out the location of the machine guns.)

Lieutenant Colonel 1st Battalion: "Executive and Operations Officer, I'll give you one more chance. What do we do now?"

Executive and Operations Officer: "Throw in the reserve."

Lieutenant Colonel 1st Battalion: "Wrong again. Two U's in a row. Captain, you are certainly doing swell. No, we haven't exhausted all other means, yet, nor is there a favorable opportunity for outflanking the resistance. The mortars and the chemical platoon are not even firing. Artillery liaison officer, can you blind the enemy observation on Wells Hill without stopping your fires on the forward enemy position?"

Artillery Liaison Officer: "Yes. The supporting artillery was reinforced by a battery of medium howitzers. That unit can easily smoke Wells Hill."

Lieutenant Colonel 1st Battalion: "Very well, make the necessary arrangements. My plan will be as follows: To renew the attack at 8:30 AM. Direct mortar fire on that

nose just east of Singleton Hill at once. Request the artillery, in addition to the fire now being delivered, to blind the enemy observation on Wells Hill, and the chemical platoon to blind the enemy observation on Elliot Hill. Then I want the tank company to move along the draw in the 30th Infantry Woods down there (pointing) and attack the enemy position on the eastern nose of Singleton Hill from the northeast at 8:30; afterwards it will assemble in the 30th Infantry Woods and await orders. Company A will follow the tank attack and seize the eastern nose of Singleton Hill and continue its attack toward Elliot Hill. Company B, as soon as the tanks appear on the nose east of Singleton Hill, will seize the 7th Infantry Woods and continue on towards Wells Hill. Have the machine-gun platoon in direct support of Company B revert to Company D at once and then fire on the eastern nose of Singleton Hill until masked."

Executive and Operations Officer: "What about the reserve?"

Lieutenant Colonel 1st Battalion: "Well * * * , let it stay where it is. Get those instructions to all concerned at once.

"Artillery Liaison Officer, we are stopped down here in front, as you know, by machine guns on the eastern nose of Singleton Hill and on Elliot Hill. I am using mortars on that first position. Can you concentrate the artillery fire on Elliot Hill?

Artillery Liaison Officer: "I will transmit your requests at once and will let you know if OK."

DISCUSSION

The preceding paragraphs cover the plan of Lieutenant Colonel 1st Battalion for renewing the attack, how he will use his supporting fires, the attached tank company and the chemical platoon to assist in overcoming the resistance on the eastern nose of Singleton Hill.

A careful study of the map will show why the battalion commander was so anxious to have the enemy observation

on Elliot Hill and Wells Hill blinded. Both of those points afford full view of the eastern nose of Singleton Hill and antitank guns located at those positions would almost certainly destroy a tank attack on the eastern nose of Singleton Hill before it could accomplish its mission.

The battalion commander and party, from the observation post on the forward slope of Davidson Hill, now observed the attack on the eastern nose of Singleton Hill by Company A 66th Infantry followed closely by the troops of Company A 29th Infantry. During this attack the chemical platoon placed smoke on Elliot Hill while the artillery concentrated its high explosive fire on the same hill and the battery of medium howitzers placed smoke on Wells Hill. The caliber .30 machine-gun platoon, which had been in direct support of Company B, returned to the heavy weapons company control just prior to this attack and from positions on Davidson Hill fired on the enemy positions on the eastern nose of Singleton Hill.

SITUATION, CONTINUED

It is now 9:20 AM. Company A following the light tanks was able to seize the eastern nose of Singleton Hill and has continued its advance toward Elliot Hill in accordance with the battalion commander's orders. However, upon reaching the draw just north of the 38th Infantry Woods, it is again stopped by fire from Elliot Hill. Company B was able to capture the 7th Infantry Woods but in doing so suffered severely and became badly disorganized. It now has about one platoon along the southern edge of the 7th Infantry Woods. These troops are firing on Wells Hill but are making no effort to advance. Company C, still in reserve, has not been used in the attack so far. It is now concealed in the southern portion of the 30th Infantry Woods north of the eastern nose of Singleton Hill. Company D has one caliber .30 machine-gun platoon (less one section) still in direct support of Company A, and the remainder of the company is on Davidson Hill. One section is sited for defense against aircraft. The mortar platoon

is firing on Elliot Hill. The caliber .50 Machine-Gun Platoon is in position on the eastern nose of Singleton Hill covering approaches from the direction of Wells and Elliot Hills. Company A 66th Infantry is in an assembly position in the draw just east of Riley Ridge. It has suffered severely and appears incapable of further action at present. The artillery is firing on Smith and Wells Hills. The attached chemical platoon is now in position near the north edge of the 7th Infantry Woods. The advance elements of the 30th Infantry on the left are generally along the southern edge of the 7th Infantry Woods and across that small hill in the distance (pointing to small hill at southeastern edge of the 7th Infantry Woods). The assault companies of the 2d Battalion, on the right, are preparing to attack Smith Hill. Lieutenant Colonel 1st Battalion has moved his observation post to the edge of the woods at the eastern end of the nose of Singleton Hill. With him are his Executive and Operations Officer, Intelligence Officer, Captain Company D, and messengers. All present are familiar with the situation. An officer from regimental headquarters has just arrived with information that the 2d Battalion, on the right, is to attack Smith Hill at 10:15 AM. The artillery liaison officer and party are approaching from Davidson Hill.

Lieutenant Colonel 1st Battalion: "So the 2d Battalion is to attack Smith Hill at 10:15 AM. Not hard to figure why the old man got that information to us, is it? Executive, what do you recommend this time?"

Executive and Operations Officer: "Throw in the reserve."

Lieutenant Colonel 1st Battalion: "Well, well, so you have finally hit the solution. There must be something to that old saying 'the third time's the charm' after all. Here is what I propose doing. Make notes and see that my instructions get to all concerned as soon as possible. I shall request the artillery, now firing on Elliot Hill, to lift on signal.

"We resume the attack at 10:15 AM using as a line of

departure that creek running east from the 38th Infantry Woods.

"Company A will attack Elliot Hill from the north. It will signal the artillery when to lift.

"Company C will move abreast of and just east of Company A and attack Elliot Hill from the northeast.

"Company B, from present position, will fire on Elliot Hill. Upon capture of Elliot Hill it will assemble in the western edge of the 7th Infantry Woods, in reserve. It will protect the left of the battalion.

"Company D (less one platoon), in general support, will fire on Elliot Hill until masked. The 81-mm Mortar Platoon will shift to Wells Hill when its fire is masked.

"The chemical platoon, from present position, will smoke Wells Hill; commencing at 10:10 AM.

"It is now 9:35 AM.

"Any questions?"

The attack was launched as ordered and the forward impetus given by the reserve company enabled it to carry Elliot Hill by assault.

CONCLUSION

From the actions taking place during the hours covered by this problem it should be apparent that the battalion commander is a pretty busy person in an attack. He not only has his organic units to command and control, but, as was the case in this situation, he will often have units attached to, and units in support of, his battalion. During this attack it has been shown how the battalion commander keeps in touch with the situation as it progresses, how he uses his support fires and other aids to assist his assault companies, and how and when he uses his reserve.

The regimental commander told the 1st Battalion to seize Elliot Hill and be prepared to assist in the capture of Smith and Wells Hills. The 1st Battalion would not advance from its objective, however, without orders from the regiment. Although the line: Smith Hill—Wells Hill was the regimental objective, the regimental commander

does not plan his attack too far in advance, just as the battalion commander did not attempt to plan his attack beyond the capture of each intermediate objective. In all units new plans must be made as the situation develops. Usually it is easier to formulate and publish a new plan than it is to change an old one.

Even though this was an interior battalion, nevertheless maneuver played an important part in the advance. In the original attack and each renewal of the attack, we could see evidence that the battalion commander had in mind the principles of fire and movement, and, as we usually say, the principle of the holding attack and the main attack. In other words, if we examine each portion of the action closely we can see where a part of the battalion, in a holding attack, was aiding another part making the main attack. This also has been true of support fires. The battalion commander was constantly shifting these fires to aid the different elements of the battalion in their advance. In conclusion, remember that no fixed method can be adopted for any two attacks. Methods vary with the mission, the enemy situation, and the terrain. None of these is ever the same.

CHAPTER 5

Service Company in Defense

(INFANTRY SCHOOL TEACHING)

We are about to accompany a class at The Infantry School and witness a demonstration illustrating the functions of the Regimental Service Company in a defensive situation. This demonstration is designed to show the actual operation of obtaining and distributing one day's requirements of Class-I supplies, ammunition and certain miscellaneous supplies.

TACTICAL SITUATION

Advance elements of the Blue 8th Division, consisting of the 29th and 30th Infantry Regiments, with the 1st Field Artillery and the necessary supply and administrative units attached, arrived at Fort Benning early this morning from the west. These troops had the mission of taking up a defensive position east of Fort Benning in order to cover the arrival of the remainder of the 8th Division.

A superior Red force is known to be advancing from the east. Air observers report that it is capable of reaching Sulphur Springs (10 miles east of Fort Benning) by 5:00 PM today.

The Blue commander has decided to defend, pending the arrival of the remainder of the division, with the main line of resistance, regimental reserve line, and boundary between regiments as shown on Figure 20. Instructions have been issued that, effective at dark tonight, the use of lights within the division area will be prohibited.

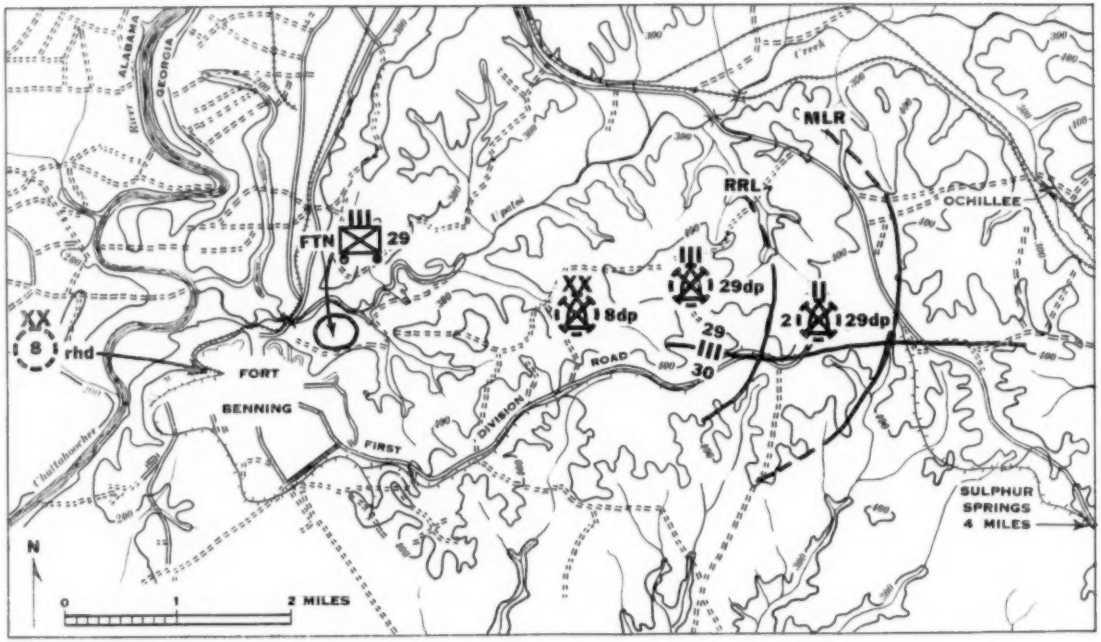


FIGURE 20.—Situation map showing partial supply establishments of the advance elements Blue 8th Division.

The regimental supply plan for the 29th Infantry was prepared by S-4 and submitted to and approved by the regimental commander. It included the following:

1. To draw one field ration A at the division railhead in Fort Benning at 2:00 PM today and to feed this ration during the ration cycle beginning with breakfast tomorrow.
2. To feed a hot supper on the position after dark tonight; to feed a hot breakfast and issue a cold lunch prior to daylight tomorrow morning.
3. To establish the regimental ammunition distributing point at the road junction 1¼ miles northwest of RJ 461 (See Figure 20.).
4. To have the ammunition loads of the company and combat trains and a refill of these loads placed on the position prior to daylight tomorrow.
5. To withdraw those vehicles that are not required in the defense of the position to the regimental train bivouac area.

RAILHEAD DISTRIBUTION

It is now 1:45 PM.

The distribution of Class-I supplies includes, generally, rations and fuel—items which are consumed at a relatively constant rate, and which can be supplied automatically, without requisition, in the approximate amounts required.

We are at the division railhead, which is usually located as near to the troops as it is deemed safe to send trains. The 29th Infantry is now organizing its defensive sector, about six miles east of this point. (See Figure 20.)

In order that you may understand the operations at a railhead, a somewhat unusual supply situation has been adopted—a situation in which railhead distribution of Class-I supplies is to be used. When vehicles of the regiment proceed to the railhead and draw the daily Class-I supplies, as in the present case, we call that "railhead distribution". If vehicles of the division quartermaster battalion draw the supplies at the railhead, and deliver them to the regiments in the train bivouac, it is called "unit

distribution". "Unit distribution" will be the normal method employed in the triangular division organization.

Railhead distribution will continue to be unusual as long as the allowance of motor transportation to infantry units remains as prescribed in the present Tables of Basic Allowances dated January 1, 1939. (For those infantry regiments not assigned to triangular divisions.) Those trucks which must come back to the railhead from the infantry units are the same trucks which must be used by the infantry units for the distribution of meals to the troops who will be scattered throughout the defensive position.

Since it usually will be necessary to draw Class-I supplies at the railhead after dark, and, likewise to distribute meals to the troops after dark, we shall always have two conflicting demands for the use of the trucks of the infantry when railhead distribution is used.

Let us consider whether the location shown on Figure 20 for the 8th Division railhead has the required characteristics for a railhead.

One requirement is a motor road to the division area. That we have. Another is that it be out of range of hostile artillery. As the railhead is located six miles from our front lines, that requirement is reasonably complied with. Still another requirement is the avoidance of cross-traffic with other divisions, a problem which does not exist in this situation. And, lastly, a siding capable of accommodating the daily train (usually 7 to 10 cars) with space for trucks to pull up alongside. These two requirements are met. Concealment from hostile air observation would be an advantage, but will seldom be obtainable. As a substitute, activities at the railhead usually are restricted to the hours of darkness.

The daily train should arrive at the railhead between dark and 11:00 PM. (The operation of supplying the regimental trains of the 29th Infantry would normally take place during the hours of darkness; it is being accomplished at 2:00 PM

in this situation so you may observe the operation.) Railheads are operated by quartermaster personnel. Their operation includes the labor of putting the correct amount of supplies on the trucks belonging to or destined for a particular unit.

The train now at the railhead is the daily train for the division. Included are—

1 Car (refrigerator) loaded with fresh meat.
2 Cars of bread.
1 Car of vegetables.
1 Car of small components.
3 Cars containing gasoline and lubricants in containers.

All of these supplies are loaded in bulk and must be apportioned at the railhead for delivery to the several units. For a division this requires about two hours work by the quartermaster railhead troops.

There are now approaching the railhead eight trucks of the Service Company 29th Infantry, sent to transport the Class-I supplies to the regiment. The convoy consists of—

1 Truck, pick-up, ½-ton, and
7 Trucks, 1½-ton (company kitchen trucks).

These trucks are accompained by an officer representing the regimental supply officer and by the necessary personnel (usually the supply sergeant and about three clerks) from the supply section of the regimental headquarters platoon of the Service Company. Contact is made with the railhead officer while the trucks back up to the freight cars. As the trucks are being loaded, the group from the supply section check the quantities that are received against lists handed them by representatives from the railhead officer. These amounts are based upon the daily strength return of the regiment, which was sent to division headquarters night before last. The supplies now being loaded on the trucks will be fed to the troops beginning with some meal tomorrow, depending on the number of meals now on the kitchen. If the regiment has suffered losses in personnel in the meanwhile, adjustment should be made between the railhead

(quartermaster) officer and the supply officer of the regiment. If a large shipment of replacements has increased the strength of the regiment a similar adjustment should be made.

The supplies are loaded directly from the cars onto the trucks in bulk. After all trucks are loaded the supply officer receipts to the railhead officer for the supplies and leads the truck convoy towards the regimental train bivouac.

SUPPLY ACTIVITIES IN THE REGIMENTAL TRAIN BIVOUAC

We will now move from the railhead to the train bivouac of the 29th Infantry; the home of the Service Company and the rear-most element of the regiment when in combat. (See Figure 20.)

In this bivouac is located the regimental distributing point for Class-I supplies. Also at this point the process of preparing Class-I supplies for issue and of distributing them to the troops is continued.

The following are the requirements of a regimental train bivouac site:

1. It should be located no nearer to the front line than five miles, and frequently will be much farther to the rear.
2. It should be on a passable road leading to the front and rear, and there should be no barrier that may become impassable between the bivouac and the troops.
3. It should have concealment from air observation and, if possible, be located in an area that lends itself to defense against mechanized attacks.
4. It should be of suitable area and be located near a plentiful supply of fuel and water.

In this bivouac the Upatoi Creek affords adequate protection on the north. The small stream and heavy timber afford partial protection on the west. A deep ditch gives partial protection on the east. There is no obstacle on the south. It does not take much imagination to realize the damage a tank attack could do to an installation such as this.

Suppose the tanks ran over and crushed all of our field ranges—the regiment might go hungry for several days.

This bivouac site fulfills most of the requirements of a train bivouac with the exception of the lack of shelter. The absence of any shelter would materially affect the functioning of the Service Company in bad weather. No shelter is provided in the Tables of Basic Allowances (January 1939) for this installation, other than the kitchen flies provided for each company kitchen.

The eight trucks that are now entering the bivouac are part of the kitchen train of the 29th Infantry. They are carrying one day of Class-I supplies for the entire regiment. The supplies were loaded on the trucks at the division railhead. Five of the trucks are carrying rations, two trucks are carrying gasoline and oil, and the ½-ton pick-up truck is carrying the checker detail from the service company personnel.

All classes of supplies, except ammunition, are received by the Receiving and Distributing Group, which operates under the control of the service company commander or the commander of the transportation platoon. This group consists of the following nine enlisted men of the supply section, regimental headquarters platoon:

1 Staff Sergeant (Supply)
2 Pvts 1st Cl or Pvts (Clerks, record)
6 Pvts 1st Cl or Pvts (Basic)

Labor for unloading, loading, and handling supplies come from any available personnel in the train bivouac, such as kitchen police of the various companies or chauffeurs off duty.

The Class-I supplies are received in bulk, and must be unloaded in the train bivouac and sorted into company lots before delivery can be made to the various kitchens.

This sorting operation requires an average of one hour in daylight and 1½ hours during darkness.

In order to avoid delay advance information should be secured from the division quartermaster concerning the basis of issue and the components of the ration. Having secured this information it is possible to make the necessary

FIELD RATION

1	2	3	4	5	6	7	16
Articles	Allowance Per Day Per 100 Men	....th Infantry	Co A	Co B	Co C	Co D	Serv
		1500	125	100	150	125	100
BEEF	50 Lbs.	750 Lds.	62½ Lbs.	50 Lbs.	75 Lbs.	62½ Lbs.	50 Lbs.
BREAD	78 "	1170 "	97½ "	78 "	117 "	97½ "	78 "
POTATOES	80 "	1200 "	100 "	80 "	120 "	100 "	80 "
COFFEE	14 "	210 "	17½ "	14 "	21 "	17½ "	14 "
MILK, EVAP	8 Cans	120 Cans	10 Cans	8 Cans	12 Cans	10 Cans	8 Cans

FIGURE 21.—Form for ration breakdown.

calculations to break down the ration into company lots. To assist in this operation there has been prepared a chart (See Figure 21) which permits the rapid calculation of the amounts of each component that are due each company.

The first column of Figure 21 lists the components of the ration. The second column shows the basis of issue. The third shows the strength of the regiment and the total amount of each component to be issued. The remaining columns show the strength of the companies and the amount of the components each is to receive.

After the chart has been completed, the next step is the preparation for issue. One of the following methods may be used:

First: Company piles may be formed by placing the company's share of each component on the pile.

Second: Each component may be placed in a separate pile, and issues are then made successively to the companies.

The first method has the advantage in that it permits adjustments to be made in case certain articles are over or short, before starting the actual issue to the companies.

The supply personnel must constantly watch for tricks used by men to secure extra supplies. For example, candles were scarce in France. During the fall of 1918 a certain unit had a Swedish mule-skinner who made the daily trip after Class-I supplies. He was, incidentally, a good rustler. After all other efforts to secure additional candles had failed, the mule-skinner hit upon the idea of wearing hip boots when he went after rations. Some time during the process of drawing rations he would ease up to the candle box and fill both boots.

When in contact with the enemy the ration is normally received, sorted, and distributed under cover of darkness. The approved supply plan stated that the ration cycle begins with breakfast. In other words, from the ration now being received the first meal will be fed at breakfast tomorrow morning.

How are the troops fed? It is now about 3:00 PM. Remember, the ration cycle begins with breakfast—that

means that we have on hand in the kitchen one meal (supper tonight) from the ration received yesterday. Troops were issued a cold lunch at the same time that breakfast was fed this morning.

At the proper time the preparation of this next meal (supper) is begun. Starting with a hot stove it requires two hours to cook a meal in daylight; 2½ hours in darkness. When cooked the meal will be placed in marmite cans and loaded on the kitchen truck; normally the food for one company will be loaded on one truck, although when conditions permit the food for two companies may be placed on one truck. The trucks will generally leave the train bivouac at dark, and proceed to the company mess location through the regimental and battalion points of release.

The mess location is a point selected by the company commander from which the men of the company are fed. Depending upon the tactical situation the men are either all fed at the mess location, or carrying parties are sent out with the food in containers for the different platoons. A combination of the two methods may be used.

The regimental and battalion points of release are points where the kitchen trucks are released to the control of battalion supply officers and company representatives respectively.

Some minutes have now elapsed since the trucks arrived and the days supply of rations have been unloaded and sorted into company lots. This operation requires an average of one hour in daylight and one hour and a half during darkness. The detail that is now approaching is from the Company C kitchen, and has come to receive the daily ration for that company. On arrival at the company kitchen the ration is divided into three parts by the mess sergeant. This operation requires an average of fifteen minutes during daylight and 20 minutes during darkness.

It will take hours to secure the rations, cook the meals and actually feed the troops. The time elements involved in

the distribution of the ration in a defensive situation *under cover of darkness* are about as follows:

Draw ration at railhead	30 min
Receive and sort at bivouac	1 hr 30 min
Deliver to company kitchens	20 min
Companies divide into 3 meals	20 min
Time to cook meal	2 hr 30 min
Feed troops on position (companies fed at kitchen truck)	1 hr
Total	6 hr 10 min

In the computation the troops were fed at the kitchen truck. Such a condition will be unusual because the tactical situation may necessitate many of the troops remaining in their defensive positions and the men will have to be fed by carrying parties. This operation doubles the time required to feed a company. The time element of the listed constants averages slightly more than six hours. In addition, there are two variables that should be considered and their time elements included in order to arrive at the total elapsed time. These variables are the time of travel from the railhead to the train bivouac and the time of travel from the train bivouac to the mess location of the company.

We will now proceed through the regimental train bivouac examining all the installations, and discussing the organization and operating functions of the Service Company as we proceed.

All personnel in the bivouac, including truck drivers, have pitched shelter tents. All tentage, material, trucks and kitchens have been located in irregular and varied size groups and they have been camouflaged. No attempt was made to secure uniformity or regularity. Grouped around the entrance are the administrative sections of the service company. Nearest to the road is located the company headquarters. This contains the usual overhead for administra-

tion and supply found in any company. It comprises the following:

Officers	Enlisted men
Peace strength 2	11
War strength 2	16

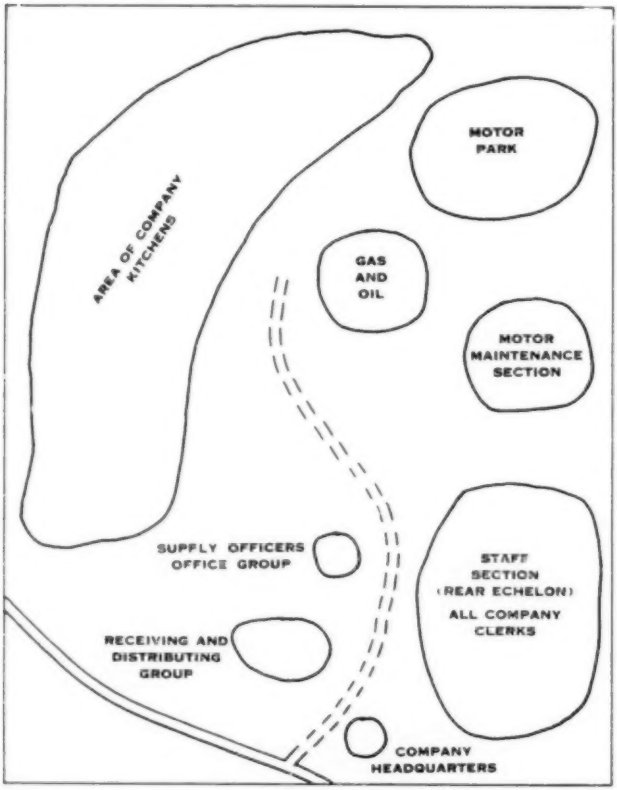


FIGURE 22.—Sketch of regimental train bivouac.

1 Major (Regimental Supply Officer, S-4, commands the Regimental Supply Service. The S-4 supervises all supply establishments within the regimental sector, but his primary

responsibility is for the necessary planning to maintain the supply service as a flexible and efficient element of the regiment. He will move wherever his presence is needed and will frequently be at the command post of the unit.)

1 Captain (commands the Service Company and the train bivouac).

---

1 1st Sergeant	1 Carpenter, general
1 Mess Sergeant#	2 Chauffeurs
1 Supply Sergeant	*3 Cooks#
1 Corporal Company Clerk	2 Cooks#
Privates	*2 Messengers
1 Armorer-artificer	1 Motorcyclist

*War strength only.
#With company kitchen in the train bivouac.

Close at hand there is located the Supply Officers' Office Group. This group consists of:

1 Master Sergeant (Supply)
2 Pvts 1st Cl or Pvts (Clerks, Hq)
1 Pvt 1st Cl or Pvt (Clerk, stock)
2 Pvts 1st Cl or Pvts (Messengers).

The group, under the supervision of the Master Sergeant, maintains all supply records of the regiment, consolidates and prepares requisitions and requests for supplies of all kinds, and compiles the operation reports.

The Ammunition Group consists of the Munitions Officer, the Sergeant (Ammunition) and one motorcyclist. At this time this group is in the forward area, engaged in placing ammunition on the position. The group operates the regimental ammunition distributing point and also conducts empty ammunition vehicles to the division ammunition distributing or refilling point, reloading them with ammunition and bringing them forward to the regimental ammunition distributing point.

In one large portion of the bivouac are located all the company kitchens. Note the irregularity of spacing the

kitchens and the camouflage. Each kitchen has its full field equipment, including marmite and water cans. The marmite cans are used to carry the cooked food to the troops on the position.

Figure 23 shows a company kitchen truck being unloaded in the train bivouac. Only a small portion of the load

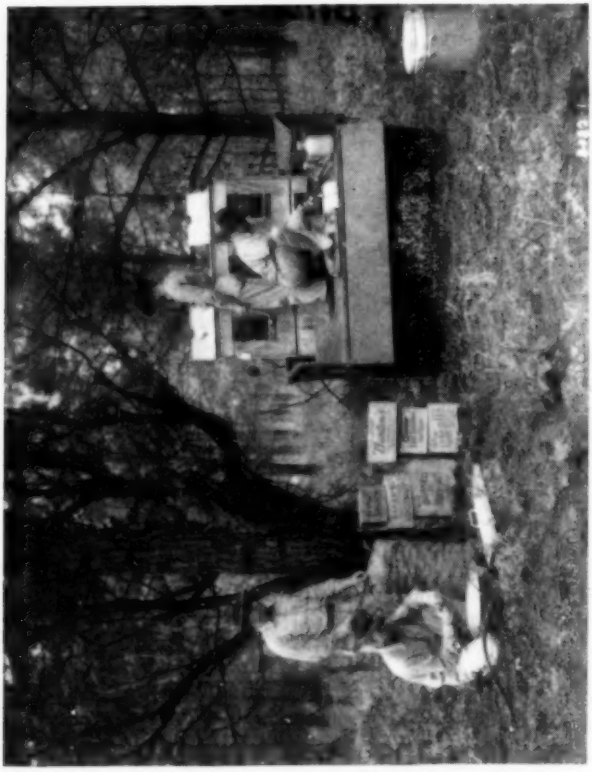
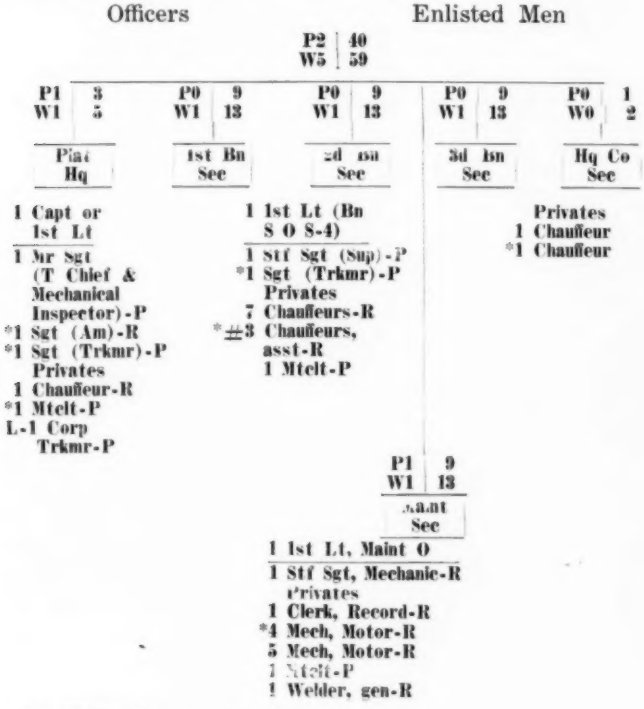


FIGURE 23.—Unloading kitchen truck in train bivouac.

is shown in the picture. The picture clearly shows the 1937 gasoline field range. This range has been declared standard, and in the course of time will be issued to all units.

This bivouac area is large and affords abundant concealment. From any one position not more than three of the

company kitchens are visible, all the remaining ones being concealed by the trees. Let us move closer to the nearest kitchen. The detail has just delivered the daily ration and in Figure 24 the Mess Sergeant and his kitchen personnel are separating the ration into lots for the three meals. Notice the small trees that are concealing the straight edges of the kitchen fly and the piles of grass that are camouflaging the water cans. At the rear of the kitchen fly are the three sections of the 1937 field range.



* Additional for war strength.
L-Loss for war strength.
± Add 3 asst chauffeurs and increase P total by 3 when mobilizing to full P strength.
P - Peace
W - War

FIGURE 24.—Transportation Platoon.

The Transportation Platoon is divided into a platoon headquarters; three battalion sections, a headquarters company section, and a maintenance section. The battalion sections consist of personnel to operate the battalion supply service and includes chauffeurs for the battalion sections of the kitchen and ammunition trains.

We will now visit the various installations controlled by this unit.

FIGURE 25.—Gasoline and oil issue point in the regimental train bivouac.

First we approach the motor park. Notice the irregularity of parking vehicles and that they are all camouflaged. Such passive measures must be taken at all times to minimize discovery and attack from the air. We must unlearn many things when we go to war—such as model camps, regularity and uniformity in vehicle parks.

This is the service station of the regimental train bivouac. (See Figure 25.) Both the oil and gasoline containers have been camouflaged (a portion of the pine branches were removed when taking the picture.) Gasoline and oil are transported in 10 gallon non-expendable containers, such

as you see here. 40 of these cans can be transported on a 1½-ton truck. The regiment has no transportation for carrying supplies of gasoline and oil. The normal method of distributing gasoline and oil is for trucks of the Division Quartermaster unit to make deliveries direct to the regimental train bivouac. In situations where the regiment is not moving it is possible for the regiment to send trucks to the railhead or to the gasoline and oil refilling point.

It is impossible to give any figures on the allowance of gasoline and oil per day for a regiment. It is dependent on the mileage made. In a defensive situation the vehicles of a regiment would expend a very small amount of gasoline and oil, whereas during a movement where all vehicles travel a distance of 200 miles approximately 2600 gallons, or 6½ truck loads (40 ten-gallon containers each) would be consumed. (For more complete information see Chapter 10, Notes on Infantry.)

It must be realized that the consumption of gasoline and oil will vary greatly, depending on such factors as age, make, model and mechanical condition of vehicles, skill of drivers, kind and condition of roads, terrain, and climatic conditions.

Next we visit the regimental maintenance section. The Master Sergeant (Transportation Chief and Mechanical Inspector), assigned to the platoon headquarters of the transportation platoon, will often operate with this section.

The section has one 1½-ton truck for the transportation of tools, equipment, spare parts, and personnel. A wrecker set is installed in this truck. There are also three ½-ton trucks for transporting personnel and tools.

A few words about maintenance. The Army system of maintenance is based on replacement of unit assemblies unless minor repair is all that is required.

A minor repair is defined as one that can be made without dismounting the unit or removing it from the vehicle.

First Echelon of Maintenance: Performed by the driver of the vehicle. It is preventive maintenance and consists of—Inspection, lubrication, cleaning, adjusting, servicing, and prevention of abuse.

Second Echelon of Maintenance: Performed by maintenance agencies of the regimental service company for an infantry regiment. Second Echelon Maintenance is defined as preventive maintenance, minor repairs, and unit replacement within the limits of time available, as determined by

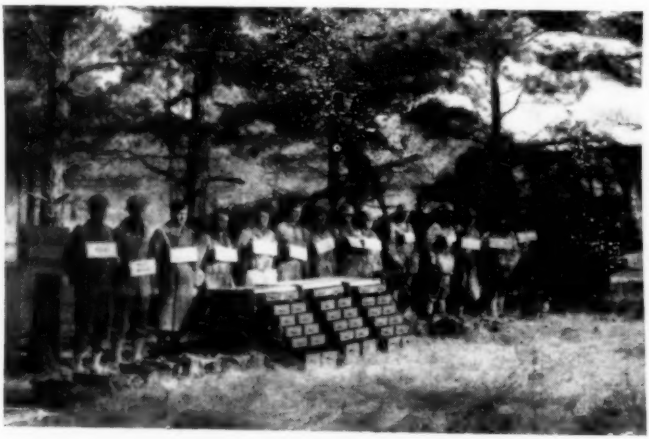


FIGURE 26.—Equipment and operatives of the regimental maintenance section.

either the tactical situation or administrative requirements, utilizing hand tools, light portable equipment, and the services of general mechanics.

The Maintenance Group is supplied with the following tools:

10 Motor Mechanics sets.
1 Unit Equipment Set No. 1, General Tools.
1 Unit Equipment Set No. 2, Special Tools.
1 Unit Equipment Set No. 3, Air Equipment.
4 Unit Equipment Sets No. 4, Block & Tackle.
1 Unit Equipment Set No. 5, Welding Set.
1 Unit Equipment Set No. 6, Electric Generator.
1 Unit Equipment Set No. 7, Wrecking.

Finally we visit the Staff Section of the Headquarters Platoon. The section is divided into two groups, one of which is headed by the Regimental Sergeant Major and operates at the Regimental Command Post. This group comprises: 1 Master Sergeant (Regimental Sergeant Major), 1 Staff Sergeant (Stenographer), 1 Sergeant (Clerk), 1 Pvt (Clerk), and 2 Pvts (Messengers). The remaining group headed by the Captain (Personnel Adjutant) consists of the following:

1 Master Sergeant (Personnel)
2 Staff Sergeants (Color)
1 Sergeant (Clerk, mail)
1 Corporal (Clerk, Hq)
3 Corporals (Clerk, mail)
3 Pvts 1st Cl or Pvts (Clerk, Hq)
1 Pvt 1st Cl or Pvt (Orderly for Chaplain)
All company clerks.

This group performs the administrative work of the regiment.

We will now move towards the front lines. (See Figure 20.) About two miles from the location of the train bivouac we reach the ammunition distributing point operated by the 8th Division. Here the infantry ammunition train vehicles are refilled after their initial loads have been distributed. Frequently the division small arms distributing point will be at the refilling point which, in the usual case, is located on a railroad siding and out of range of hostile artillery. In this tactical situation the division small arms distributing point has been established farther forward for the convenience of the infantry units. It would be re-established at the refilling point at Fort Benning after the reserve of small arms ammunition, carried on the Division Quartermaster train vehicles, had been distributed. At times this ammunition may be dumped on the ground or it may be left in trucks which are dispersed and concealed.

Another mile towards the front and we reach the regimental ammunition distributing point. This is an important link in the chain of ammunition supply. Its site is selected by the regimental supply officer and, after approval by the regimental commander, its location is announced in the regimental field order. It should be at a point accessible to motors and convenient to the units of the regiment. It will usually be located from two to three miles from the front line. After the initial loads of the company and combat train vehicles have been distributed the vehicles revert to regimental control at the regimental ammunition distributing point. From there they are conducted by the regimental munitions officer, or his representative, to the distributing point established by the division. There they are reloaded and then conducted to the regimental distributing point, where the loads are transferred, as required, to the company weapon and ammunition carriers. Under certain conditions, particularly in the defense, it may be expedient to release the loaded combat train vehicles to the battalions at the regimental ammunition distributing point so that their loads may be distributed directly to the companies in the forward areas.

FORWARD AREA

We are now near the point where the railroad track crosses the First Division Road about 3/4 mile west of Harmony Cemetery. (See Figure 20.)

This is the forward area of the 29th Infantry. We are in the rear part of the area occupied by the 2d Battalion of that regiment. It is an interior battalion. The 30th Infantry is on its right and the 1st Battalion is on its left. The 3d Battalion 29th Infantry is on the regimental reserve line to the rear.

Within the 2d Battalion, Companies E and F are now on the main line of resistance and Company G is in the battalion reserve area. Elements of Company H, the heavy weapons company, will be distributed throughout the battalion area.

After the regimental order for the defense was received, the Battalion S-4 recommended the location for the battalion ammunition distributing point. He also recommended that extra ammunition for the rifle companies be issued to the troops after they arrive on the position. This is a routine practice in the defense since it permits the uninterrupted movement of the troops to the position by avoiding the delay incident to the issue of ammunition at some point enroute. The recommendations of the S-4 were approved by the battalion commander and announced in the battalion order for the defense.

This site is the location of the battalion ammunition distributing point of the 2d Battalion. (See Figure 20.) Through this installation the battalion commander controls the movements of the ammunition vehicles and facilitates the supply of ammunition to his companies. Empty ammunition vehicles are sent by the companies to this point and here come under battalion control. After they are refilled they are released to the companies as required. Unless the situation makes it imperative, ammunition will not be dumped at the battalion ammunition distributing point. In the defense the usual procedure is to dump the ammunition in the company areas on the position.

The Battalion Headquarters Detachment has an ammunition section of 19 men (1 sergeant, 2 corporals and 2 squads of 8 men each). The function of this group is to assist in forwarding ammunition to front line units, that is, they carry ammunition from the ammunition vehicles to the companies. Especially, their services are required to assist in carrying mortar ammunition. When the battalion develops, this groud will report initially to the battalion ammunition distributing point, the Battalion S-4 allots men to the companies as the situation may require.

The foot elements of the battalion are now enroute to the company areas. The motorized elements, which have been following the regiment by bounds, have been released by the column commander and are now rejoining their units. At the present time, the company transport and ammunition trains are moving under battalion control in rear of the foot

elements of the battalion. They must be made available to their units as soon as practicable after the troops arrive on the position. The battalion ammunition distributing point is a convenient point for their release. The units have been notified to send guides to that point to conduct the vehicles to the company areas. The Battalion S-4 is arriving at the battalion ammunition distributing point with certain motorized elements of the battalion.

FIGURE 27.—Part of ammunition section joining machine gun platoon.

The first group of vehicles that are approaching comprise one passenger car and four 1½-ton trucks of a platoon of .30 caliber machine guns of Company H which will occupy positions in the forward area. It consists of platoon headquarters and two sections of two squads each. The car

carries members of platoon headquarters. Each truck carries:

9 men, including the chauffeur.
2 machine guns, one of which is a spare and is used in the defense only.
27 chests containing 250 rounds of ammunition each.
Fire control equipment.

The battalion S-4 allots a corporal and 8 men of the ammunition section, to the heavy weapons company. They are now joining the vehicles and will accompany them to the point where the ammunition is taken from the vehicles and hand-carried to the gun positions.

The next group of vehicles comprise the 81-mm mortar platoon of Company H consisting of platoon headquarters and two squads. One passenger car is provided for the personnel of platoon headquarters and one truck for each squad. Each truck carries:

8 men, including the chauffeur
1 81-mm mortar
138 rounds of mortar ammunition
Fire control equipment.

Next group arriving is the .50 caliber machine-gun platoon of Company H consisting of platoon headquarters and two squads. There is one passenger car and two trucks for this platoon. Each of the trucks carry:

8 men, including the chauffeur
1 .50 caliber machine gun
32 chests, each containing 100 rounds of .50 caliber ammunition.

The three weapon and ammunition carriers of the rifle companies and the three trucks of the battalion section of the ammunition train next arrive at the battalion ammunition distributing point. The Battalion S-4 sees that the company guides join the vehicles in order to lead them to the respective company areas.

In this problem the Battalion S-4 is allotting 4 men of the ammunition section to the weapon and ammunition carrier

of Company E, and the remaining corporal and 4 men to the vehicle of Company F. The sergeant of the ammunition section will supervise the work of all of the groups and make such adjustments as the situation may require from time to time. Each rifle company has one weapon and ammunition carrier. Its load consists of:

1 chauffeur.
1 company supply sergeant.
4 light machine guns.
3 60-mm mortars, one of which is used in the defense only.
700 rounds of 60-mm mortar ammunition.
16 chests of light machine-gun ammunition, each containing 250 rounds.

FIGURE 28.—4 men from ammunition section joining 81-mm mortar platoon.

The initial loads of the trucks of the ammunition train consist of extra ammunition for the rifle companies:

192 rounds for each semi-automatic rifle.
150 grenades.

The company armorer-artificers of the rifle companies ride on these trucks and prepare the ammunition for issue.

The medical section truck, which is a part of the medical train, carries aid station equipment and certain medical personnel. The company aid men accompanied the foot elements of the battalion to the position. This truck moves to the site of the battalion aid station. After the aid station has been established this truck will be withdrawn to the regimental train bivouac in the rear area.

The next vehicle is an infantry tool truck. It is not an organic vehicle of the infantry regiment, but has been released to the regiment by the Division Engineers. It carries shovels, picks, saws, axes, pinchbars and sand-bags which will be used by the infantry troops in the organization of the position. It will be conducted to the company areas, in turn, and the tools distributed at the places to be designated by the companies. It will then revert to the control of the engineers. (For more complete details see Chapter 7, It Takes Time To Dig In.)

The weapon and ammunition carrier of Company G and one of the ammunition train trucks can be seen in the foreground. Company G is the battalion reserve unit and will occupy positions in the rear of the battalion area. The company commander directed the second-in-command to supervise the distribution of ammunition to the company. There are a number of ways in which the ammunition may be distributed:

a. It may be dropped from the truck in small dumps.

b. It may be moved by carrying parties from the truck to the platoons.

c. It may be distributed directly from the truck to the platoons which come to the truck for that purpose.

d. By a combination of the above methods.

We are demonstrating here the distribution of ammunition to a rifle platoon at the truck. The ammunition has been prepared for issue and has been placed on the ground in convenient piles so that the squads may draw their ammunition simultaneously. This operation will require about 30 minutes in daylight and about 40 minutes at night

for a rifle company when the ammunition is distributed at one location. Before extra ammunition was issued each rifleman carried 40 rounds in his belt (24 rounds armor piercing and 16 rounds tracer). He was issued 2 bandoleers containing 192 rounds and now has 232 rounds.

Frequently, in defensive situations, a reserve of ammunition in addition to that carried within the regiment is placed on the position. When practicable, this is done before the enemy makes contact or under cover of darkness,

FIGURE 29.—Issuing ammunition to a rifle company.

so that the loaded ammunition vehicles will not be exposed to observed fire. For the same reason, the subsequent supply of ammunition should be effected at night.

ONE HOUR LATER

In this situation it was decided to place the initial loads of ammunition and a refill on the position. The ammunition vehicles of the battalion are now individually returning to the battalion ammunition distributing point after their initial loads have been distributed. When all have been reassembled they will be conducted under battalion control to the regimental ammunition distributing point. Thence

they will be conducted, under regimental control to the refilling point where they will be reloaded. (This being a defensive situation it is practicable to take the company ammunition vehicles to the refilling point for reloading, thus expediting the delivery of the ammunition to the position.) After the vehicles have been refilled they are moved under regimental control to the regimental distributing point where they are again released to the battalions.

After the vehicles have again been unloaded on the position those which are no longer needed in the forward area would again be conducted to the rear, refilled and placed in bivouac, usually in, or in close proximity to, the regimental train bivouac. Thus these loaded vehicles constitute a rolling reserve of ammunition to meet contingencies.

SEVERAL HOURS LATER

It is now dark. The enemy has made contact and driven in our outpost.

The units are confronted with the problem of feeding their troops. Earlier in the day you saw the regiment draw a ration at the railhead and deliver it to the train bivouac. There it was divided into company lots and distributed to the kitchens. At the kitchens the mess sergeants sorted it into three meals. During the afternoon the regimental S-4 submitted his plan for feeding to the regimental commander. When this plan was approved the information was transmitted by message to the battalion and service company commanders. At the proper time supper was prepared. At dark the cooked meal was placed in containers, loaded on the kitchen trucks which then came forward under the supervision of the transportation platoon commander.

The Regimental S-4 selected a point, enroute to the front, at which the kitchen trucks will be released to the battalions and to headquarters company. He notified the respective commanders where and when these trucks would be released. The point of release should be at a place convenient to the battalions, and sufficiently prominent as to be easily recognized in the dark. It will frequently be at or near the

regimental ammunition distributing point. The Battalion S-4, or his representative, meets the kitchen trucks at the regimental point of release and conducts them forward to the battalion point of release.

The Battalion S-4's, in turn, select the battalion points of release and notify their companies of the location and the time when the trucks will be released to them. Frequently this will be near the battalion ammunition distributing point. Here they are met by company guides and conducted to the company mess locations. These locations are selected

FIGURE 30.—Feeding a company from containers.

by the company commanders who also arrange the details of feeding their companies. The mess location should be defiladed from enemy small arms fire, should have concealment from enemy air and ground observation and, when practicable, should be not in excess of 1000 yards from the front line.

The truck now approaching is the kitchen truck of Company G. It brought forward the supper for Company G

and for certain members of the battalion headquarters detachment and the battalion medical section who have been attached for this purpose.

There are a number of methods which may be used in feeding; we may:

1. Assemble the entire company at the truck.

2. Use carrying parties from each platoon; or a variation of these methods: i. e.,

a. The support platoon may eat and then furnish carrying parties for the remainder of the company.

b. One half of each platoon may eat and carry to the remainder.

c. The support platoon may eat at the truck and carrying parties come back from the other platoons.

The last method is used in this demonstration.

After the companies have been fed the food containers are collected and the trucks return to the battalion point of release so as to arrive there by the time prescribed. They are then conducted by the Battalion S-4 or his representative, to the regimental point of release, where they revert to regimental control and are conducted to the regimental train bivouac.

At the proper time the kitchen personnel prepare a hot breakfast and the noon meal which will consist generally of sandwiches. Conforming to the regimental plan and in sufficient time to permit the trucks to leave the forward area before daylight, the kitchen trucks are again conducted to the forward area and the procedure you have just seen demonstrated is repeated. The cold lunch is issued to the men at the time that breakfast is served. It requires about 6 men to carry food to a front line platoon. The carrying parties place the containers at a point previously designated by the platoon commanders. Then under supervision of the squad and platoon leaders the men, singly or in small groups, come to the designated point and obtain their food.

We should not stand on ceremony in feeding. Men who cannot conveniently be fed from their company kitchen trucks should be fed at the nearest company kitchen truck.

When this contingency can be foreseen the battalion supply officer must be informed so that he, in turn, may transmit the information to the regimental supply personnel. Adjustments are then made at the kitchens to insure that adequate food is forwarded to the company which is to feed the attached personnel.

When not carried by the individual the rolls are transported in the 3/4-ton trailers or on motors attached to the regiment for that purpose by higher authority. In this situation the rolls would probably have been brought to the position during daylight. If this had not been practicable they would have been brought up when the kitchen trucks came forward with supper.

FIGURE 30a.—Removing the 3/4-ton trailer from the kitchen truck.

The individual reserve ration which is carried on these same vehicles would have been brought to the position when the rolls were delivered, if they were not already in the possession of the individuals. It is essential that they be on the defensive position as they constitute a reserve food supply and will be needed in the event that the kitchen trucks cannot be brought up.

CONCLUSION

You have witnessed the supply of a regiment from the railhead to the ultimate consumer - the man in the front line. The situation is typical, but remember that in a demonstration the operation is smoother than it would be in combat. We have suffered no casualties in personnel or transportation, the weather has been favorable, the operation has taken place in daylight so that it could be seen.

Visualize, if you will, the difficulties of the operation when conditions are less favorable—with rain, hail, snow, ice, or mud; when the terrain is strange to our personnel, roads practically non-existent; when we have mechanical and human failures to contend with; and when the guides fail to meet the trucks or get lost after they meet them. You can understand, then, that plans must be carefully drawn and their execution carefully supervised. A failure at this point in the supply system renders the entire system a failure from the viewpoint of the soldier since it has failed to accomplish its intended mission—to supply the soldier with food and ammunition.

9Aug40KW

CHAPTER 6

A Military Reservoir

Recently, the idea has been promulgated by some military thinkers that the officers of the regular army know little about discipline, morale and leadership. This may be an attempt to arouse the officer personnel to its responsibilities along these lines. Because it appears, at least to the reasonable thinking officer, that no group of men in any walk of life display a more comprehensive knowledge of leadership, morale, and discipline than the officers of the Regular Army.

This statement may astonish some of these military thinkers; it may surprise them as does the footpad his victims, leaving them stunned by the boldness of his onslaught, or it may be quickly dismissed by them as the mutterings of an idiot "full of sound and fury, signifying nothing". For even to suggest that we know our business is assuming too, too much in the striving for sensational revelations on the proper way to handle troops. Yet, there may be a few iconoclasts who will deny that the core, the fiber, the very essence of a military organization is contained in the implications of the words: leadership, morale and discipline—but not many. No greater number will fail to admit that the same is true for any organization, military or otherwise. After all, the army has no monopoly, no God-given insight, on leadership, morale, and discipline. The football coach, the factory or mail crew chief, the mine foreman, the production manager, in fact anyone in an executive position which requires that the efforts of the group be coordinated and devoted to a common purpose have problems of leadership which vary but little from the leadership

problems of the army officer. There are certain fundamentals akin to all. High morale—the army kind—has its civilian counterpart in the cheering section at a college football game, or in the old lady who announces with pride that she is one of the Crandals of Crandalsville. It is most marked in fire departments, police departments, railroad crews, telephone and telegraph crews, who stick to their jobs during fire, flood, panic or storm without regard for their personal comfort or safety. It is noted in communities that have suffered disaster, such as the sudden sweeping destruction of a tornado. The people do not remain striken; they arise; they begin rebuilding with a will; and with renewed vigor refuse to accept defeat. It is the American spirit, the American way. And it is further noted that it flourishes under adversity. To dig through a pile of musty tomes in order to bring out triumphantly the obvious truth that morale is not lowered by adversity is a ridiculous misdirection of energy and a failure to observe clearly.

But the advanced military thinker does not agree. To him, morale is an awesome intangible. He states that army officers believe that discomfort always lowers morale. And to prove the point he cites, as a favorite example, the corps commander who marched his corps seventy-seven miles in forty-four hours, and then he triumphantly points out that the men, with only five hours rest, successfully resisted the main attack of a fresher enemy. The deduction always made, is that discomfort does not lower morale since it apparently failed to do so in the case cited. There is a bit of foggy reasoning going on here. No reasonable thinking army officer believes that hardships always lower morale. No, not that. But he does believe that hardships tend to lower morale, and consequently it is the leaders task not to subject the troops to unnecessary discomfort and fatigue. It may be strange, but the reasonable thinking officers believe it is the failure to avoid unnecessary hardships that lowers morale and not the hardships themselves. As the popular phrase has so aptly put it, "It is not what you do, it is the way you do it. That's what gets

results". Troops with good morale can and will march punishing distances and fight winning battles. Such phenomena are a military commonplace.

Would it be an exaggeration to say that morale fluctuates with leadership; that, in general, poor leadership results in low morale; good leadership produces high morale? If not, is the converse of this statement true?

The advanced military thinkers contend that this is but a piece of circular argument; that it is merely explaining one intangible by quoting another. But Baron Von Steuben has given a few masterly instructions—they may be termed principles they are so fundamental—for the development of morale and leadership that, despite the voices of the advanced military thinkers crying, intangible, intangible, the reasonable thinking officer has no difficulty in understanding and, what is more, making them work.

VON STEUBEN'S INSTRUCTION FOR THE CAPTAIN

"A Captain cannot be too careful of the company the state has committed to his charge. He must pay the greatest attention to the health of his men, their discipline, arms, accouterments, ammunition, clothes and necessaries.

His first object should be to gain the love of his men by treating them with every possible kindness and humanity, inquiring into their complaints, and when well founded, seeing them redressed. He should know every man of his company by name and character. He should often visit those who are sick, speak tenderly to them, see that the public provision, whether of medicine or diet, is duly administered, and procure them besides such comforts and conveniences as are in his power. The attachment that arises from this kind of attention to the sick and wounded is almost inconceivable; it will, moreover, by the means of preserving the lives of many valuable men."

Can anyone quarrel with Von Steuben? Does he give a practical method for a leader to follow or not? Could this form the basis of a most tangible first lesson in that great field of intangibles—discipline, morale and leadership.

But just a minute; what is morale and what is leadership? Where are your definitions? Who are your authorities? Where are your neatly cataloged references to a long, endless bibliography? In other words, do you know what you are talking about? We will answer this be referring you to the theorist, the psychologist, and the pedantic writer. It matters little whether we have a definition or not. Officers commanding troops in the field don't give a damn about definitions; they are too busy leading. All they want to know is how to use leadership to get morale and what results may be expected. Edison or Steinmetz could not tell us just what is electricity; yet they were able to work *miracles* by its use for the benefit of all mankind. All they knew about electricity was how to get it and what uses could be made of it. The American people, as well as army officers, know how to lead and how to obtain morale and they know about the results they can obtain even though they would be stumped for a definition. Just as electricity will turn a motor, so will leadership and morale knit together a heterogeneous mass of men into a cohesive, fighting group that will stick together till death do them part.

But it is discipline that gives rigidity to the military structure, is it not? Leadership and morale must be stiffened with the starch of discipline or our army organization will buckle under the strain of combat. You are right. There is no getting away from discipline. We have family discipline, school discipline, church discipline, civic discipline, prison discipline, army discipline, as well as the discipline required of employees in their various vocations. Many different kinds could be named, each of its own peculiar type according to its purpose. There is nothing new, strange or startling about discipline. And it is a comparatively simple matter to determine the particular type of discipline our particular problem requires.

Thus, we find in our nation a tremendous reservoir of discipline, morale and leadership from which to draw in time of emergency. The water from this reservoir is filtered and purified, treated and changed by the army

officer until it meets the tests of battle. Civilian leadership, morale, and discipline become army leadership, morale and discilpline. The army officer himself is a product of this same reservoir; naturally he is familiar with its output. What greater laboratory could any scientist have than has the commander of a unit? What better laboratory equipment could he have than the human beings whom he commands and controls? If the officer who spends years in the great laboratory of human nature does not know his subject, who does? Is he not a master? If not, who is?

Let us take a look at the record. There are several different ways by which knowledge of a subject may be tested. First, it may be tested by examination. This is the poorest method. Second, it may be tested by requiring a thesis. This will give some indication of the knowledge of the subject. Third, the knowledge of the subject may be determined by the results acheived. This is the best way to test, not only the theories, but the practicality of such theories and the ability to apply the principles. This being the crucial test, let us employ it.

An account of the most colossal effort ever made by our army is found in the records of the American Expeditionary Force. Read and study carefully the histories of the combat divisions, the records of the various engagements, the report of the commander-in-chief, the various authoritative books that have been written, particularly The Infantry Battalion in War by Colonel Walter Wheeler, and Infantry in Battle, complied and published by The Infantry School. It is not necessary to cite particular instances of outstanding leadership, morale, and discipline. Every page tells its story of achevement. True, we cannot point to a Napoleon or Davout, but who wants to? Battles are no longer fought by a genius on a white horse personally conducting the operation from the top of a nearby hill. Higher commanders, who are responsible for the planning, must depend upon the leadership of subordinates to carry out the plan. Modern battles are fought by groups of small units, whose actions are ordered and coordinated by the higher command. Isn't it far better that this quality of leadership be spread over

all subordinate leaders rather than be concentrated in one man?

The present Chief of Staff has often told the classes at The Infantry School that military success depended ten percent on planning and ninety percent on execution. Execution, in turn, depends upon the leadership, the morale, the discipline, the technical and tactical efficiency of the small groups whose efforts are directed and coordinated by their leaders to a common end. It is these leaders of the small groups, not the genius on the white horse, who carry the line of battle forward. Considering the AEF as a whole, can anyone say that from this viewpoint it lacked leadership, morale, or discipline?

Whence came this leadership of junior officers and noncommissioned officers, the morale and discipline of the AEF? It could have come only from three sources: inherent quality, early training in civil life, a short period of military training. No one can say how much should be attributed to each of the three sources. Judging alone from results acheived, we must give great credit to that small prewar group of Regular Army officers.

Most of the field officers and many of the captains today learned the lessons of leadership, morale, and discipline in the World War. Some of the senior officers already knew the lessons. How well the knowledge derived from these lessons has been passed on can be seen in the actions of the junior officers of the army today.

Let us now look at a great peace-time achievement, the mobilization, training, and administration of the Civilian Conservation Corps. Without time for proper planning and preparation, the army was faced with this tremendous job. Assembled hurriedly in camps throughout the country were 350,000 young boys under the supervision, direction, and control of Regular Army officers. There was no war to spur their patriotism, no great national emergency to kindle their spirits and raise high the flames of their enthusiasm; no strict war-time measures, guard houses, or military courts to restrain the obstreperous. Depressed, stricken with poverty, starving wanderers in a land of

plenty, they were sullen, resentful, suspicious, and defeated. Yet despite all of this, the record of achievement in leadership, morale, and discipline has been such as to elicit the admiration of the nation. Who was responsible for this? There is only one answer: the Regular Army officers who mobilized, trained, and administered the CCC. Recently a writer—a Regular Army officer—exhorts army officers to study the CCC in order to learn about leadership, morale, and discipline. What a helpful idea! He would probably advise Henry Ford to study the Mercury Eight in order to learn how to make automobiles.

Never since the World War has the leadership, morale, and discipline of the army been so high as it is today. One need spend only a few days with the divisions now training in the south, or follow the school troops at The Infantry School in field exercises and demonstrations to be made aware of this fact. To the experienced eye it is apparent that here are troops whose leadership, morale, and discipline are of the highest so far as it can be determined without the crucial test of battle. Would they stand this test? After the experiences of 1917-18—and we can only judge such matters by the yard stick of experience—one is convinced that we need have no fear of such a test.

The experienced officer, not the diligent reader, can readily look beneath the surface and fairly accurately determine the spirit of the troops. In all the newspaper reports of visits of inspection made by the Chief of Staff to observe troops now training in the south, he remarks upon and emphasizes the high state of morale and discipline. Can he be mistaken?

This state of affairs does not just happen. It is the result of hours of study, days of hard work, years of experience, in the great laboratory of troop duty, and a carefully planned, properly supervised course of instruction and training for junior officers. Here is the way it is done in one regiment. Probably the same general idea prevails in other regiments.

The regimental commander, drawing on his wealth of

knowledge and experience and realizing the great importance of the project, has outlined a comprehensive course in leadership for junior officers. The students are given theoretical instruction in troop schools, supplemented by the laboratory work previously mentioned, under the guidance of experienced instructors who have demonstrated by results achieved that they know their subject. The subject is stripped of all its mysticism and awesome talk of intangibles. It is presented in a simple, direct, practical, and definite form like any other military subject. The student is given the fundamentals, the Psychology of Leadership, an Outline of Sociology to include the formation of groups, Methods of Teaching, Analysis of Great Leaders, and a bibliography for supplementary reading and study. In the recruit detachment, he studies his raw material. In the company he studies the finished product—the trained, disciplined soldier. In the field and on the drill ground he tests his theories and learns the reaction of his troops to certain stimuli. The point is that this subject of leadership, morale, and discipline is being intelligently taught these junior officers.

Every young officer today may be assured that the way is open for him to develop leadership if he will take advantage of his opportunities. Sincere application, properly directed study, and correctly supervised work with troops will bring the desired results in this phase of military training the same as in any other. And the young officers are getting results.

Make no mistake—*Leadership Can Be Taught* the same as any other subject. The old persistent fallacy that leaders are born, not made, is the easy, stupid alibi of the unambitious. In a class of student officers being taught leadership, there will, of course, be outstanding leaders in the class; others will just pass. This is true of history or any other subject. But after a two-year course, as outlined above, every member of the class will have a working knowledge of the subject. The young officer by continuing his study and his efforts along similar lines throughout his career will broaden his knowledge and ability until his position as

a leader of men will be firmly established. He will not be a Napoleon. We are not concerned about Napoleons. A genius will rise to the top just as naturally as the cream rises in the milk. What we are doing is developing platoon leaders who know the art of imposing their will upon others in such manner as to command their obedience, their confidence, their respect, and their whole-hearted cooperation. Here and there will be a failure. This is to be expected, but the leadership, morale, and discipline of the army will continue to maintain its present degree of excellence.

There is far more to the training in leadership than merely the training of the young officer. He, in turn, directed by the company commander, must see that the noncommissioned officers and potential noncommissioned officers get similar training. Now, indeed, must the subject be stripped of all fancy trimmings and presented in its simple, bare essentials, lest it be unrecognizable. Talk not to the soldier of vague and nebulous psychological theories, of the powers of instinct, the psychology of fear, the reactions of the mind to stimuli, the herd instinct, the cohesion of the group, or the psychology of panic. Simply teach him how to do his job, and let it go at that. Give him less classroom work and more laboratory work—experience in leading. Never fear, if properly taught he will learn. He always has. The leader who said to his men just before going over the top, "Come on, you—— — ——; do you want to live forever," had "what it takes" even if he didn't know a damn thing about the herd instinct.

Uncle Sam has never fully appreciated the necessity for military preparedness. In the light of the international situation, we are today woefully and dangerously weak. Today compared with the modern armies of other world powers our army is pitifully small, lacking in needed equipment. To the military man, concerned about the welfare of the nation, this is a dark picture with one bright spot. We know that leadership, morale, and discipline are the heart and soul of military efficiency. The senior officers of

our army, backed by their American heritage of leadership, supplenmented by their wealth of World War experience, are the tops so far as it is humanly possible to determine without the test of war. This is reflected in the leadership training of the young officers, the noncommissioned officers, the ROTC, and the other components; all dipped from the great national reservoir of potential leadership. We may be concerned about our military weakness, but if leadership, morale, and discipline alone would win a war, we are ready to defend our interests against the world.

CHAPTER 7

It Takes Time To Dig In

(AN INFANTRY SCHOOL STUDY)

Do you remember the six hour plan? An infantry battalion under the old organization could organize hastily a defensive position in about six hours. But try to do it now. In the new organization, man-power has been reduced, the number of weapons to be emplaced has been increased greatly and the number of engineer tools necessary to do the job have not yet been determined. When one of these stream-lined battalions receives an order to dig in, it settles down to ten to twelve hours of back-developing labor, if that much daylight is available, otherwise it will take longer. And then the position will be organized "hastily" and not thoroughly. Our school and extension course problems never seriously consider this important element of defensive training. They invariably end with the rapid defeat of the enemy or an occasionally orderly withdrawal, all within the course of a few days. Is there not more likelihood of a stalemate in actual war between trained, well-equipped foes than these decisive blitzkreigs, these overwhelming victories, these school campaigns of only a few days?

It is admitted that increased automatic fires have but increased the importance of intrenchments and obstacles. It is admitted that the infantry battalion is stronger defensively than a similar battalion in the attack. It is admitted that it takes a preponderance of force to crush a defensive front. Proof of this is easy to find. Where

intrenched, poorly-equipped Chinese have held up well-trained Japanese legions for many days. Madrid's long resistance in the Spanish War was due in large part to the judicious use of intrenchments. And to point to the big picture, how about the Maginot Line and the West Wall.

If we are to sacrifice mobility in order to gain strength, it would be wise if we do it properly.

The infantry officer of to day receives intensive instruction in the tactics of the offense and the holding power of the defense but only rarely is he taught anything concerning field fortification. Can you recall seeing a battalion dug in during any of our recent maneuvers, or for that matter during any of our tactical training. We all have read that famous defensive mission "to organize, occupy and defend * * * ." How much thought have we given to the word "organize" in this tri-parte mission? This article will discuss the hasty organization of the ground and its application to a battalion center of resistance.

What tools are available to the infantry for this organization of the ground? The infantry rifle squad has the small intrenching shovels and picks carried by the individual soldiers; a few full size tools are carried by the machine-gun and mortar trucks. The divisional engineers in the square division have six sets of intrenching tools for the infantry. Each set suffices for an infantry battalion and can be carried on one 1½-ton truck. It is estimated that, in the normal situation, only six of the infantry battalions in the square division would be organizing centers of resistance at the same time. At the time of this writing (June 1, 1940) the number of sets to be carried for the triangular division has not been announced.

Each set for an infantry battalion includes 250 shovels, 125 picks, 26 axes and 26 saws, presumably sufficient to provide a tool for each worker in the average case where wire entanglements are being erected concurrently with the excavation work. We shall check this presumption in detail below.

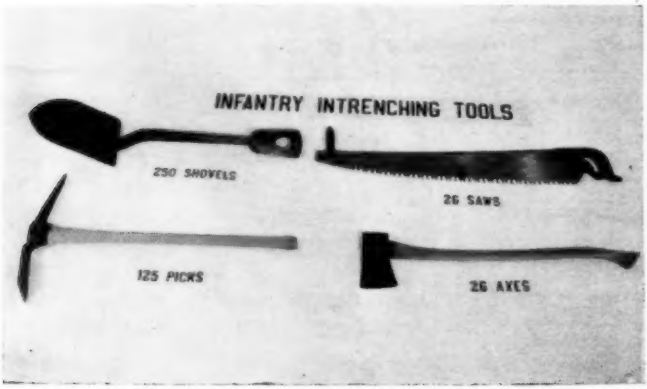


FIGURE 31.—The Battalion Set of Intrenching Tools.

The hasty organization of a position may be divided into seven basic tasks as follows:

1. Foxholes for the riflemen and for the men not in the emplacements of the infantry weapons.
2. Shallow connecting trenches for lateral communication.
3. Emplacements for the infantry weapons.
4. Command and observation posts and aid stations.
5. Obstacles.
6. Clearing fields of fire.
7. Camouflage.

These tasks are not listed in the order of their commencement nor of their completion. Situations will vary. If already under enemy fire, the cover afforded individual infantrymen by foxholes will be the prime consideration.

On the other hand if several hours are available for work before the enemy gains contact, a flexible schedule involving all the tasks simultaneously may be followed.

In situations where time is available to accomplish *all* the tasks, the most important task is No. 6, namely clearing the fields of fire. An infantryman well ensconed in a foxhole is of little or no value if he cannot see at least a hundred yards from his cover to deliver aimed fire on an attacker. Moreover this is one task which usually requires daylight, for clearing done in the dark is likely to prove of little value. When dawn breaks, it may disclose overlooked patches of underbrush which still block a clear field of fire.

As for task No. 7, camouflage, this must be progressive as the other tasks are undertaken. In these days of intensive aerial observation what sense is there to exposing your work openly while it is under way and then camouflaging it carefully *after* it is completed? What is to prevent an enemy plane from observing the locality while the work is under way? We must strive to conceal work while it is *under way* as well as the completed work.

In considering the other tasks listed above, remember that the time available naturally determines how much will be accomplished. If only an hour is available, work will be concentrated on the clearing of the fields of fire, obtaining the cover of foxholes, and possibly erecting some wire entanglement to block likely avenues of enemy approach.

ILLUSTRATIVE PROBLEM

Let us consider a situation where the 1st Battalion 1st Infantry, part of a larger force, has been ordered to defend the sector shown on the accompanying situation map. The order to "organize, occupy and defend" is received by the battalion in time for work to commence at 3:00 PM today. The enemy is not expected to attack before daybreak tomorrow (4:30 AM). Darkness falls at 7:00 PM.

The order stated that one complete battalion set of intrenching tools would be made available to the 1st Battalion at 2:00 PM. As no barbed wire or pickets are carried in the trains of the triangular divisions, these items will

be delivered to the battalion defensive position along with the intrenching tools.

How much of the position can be completed before the enemy can attack? Can the center of resistance be completely wired in or will only the tactical wire be completed? Will the machine guns be emplaced with lanes of fire cleared and with supplementary and alternate emplacements provided? We shall endeavor to present simple methods of quickly answering these questions.

The 1st Battalion 1st Infantry has the organization that went into effect on January 1, 1939 as modified by the new table of organization 7-17, for the rifle company effective Feburary 1, 1940. Since the tool situation will be most difficult when the battalion is at full war strength, we shall consider that case. As there are 27 officers and 750 men in the war-strength battalion and only 375 intrenching tools in the infantry tool truck, it is obvious that all men cannot intrench at the same time. There are 52 tools (axes and saws) for clearing fields of fire. Some men may be engaged in erecting wire entanglements; others will be engaged in clearing fields of fire or in bringing up ammunition.

WIRE ENTANGLEMENTS

Our tactical wire is the double-apron fence.

In the construction of the double-apron fence the pickets are usually set at four pace intervals.

A double-apron wiring party consists of 10 men. In the normal situation, not under enemy fire, it can construct an average of fifty yards of wire in 30 minutes in daylight. In the same period of time, provided the carry does not exceed 800 yards one way, a party of 16 men can keep the wiring party supplied with wire and pickets. This may be expressed as: T-10-16-800-30. T shows that we are referring to tactical wire (the complete double-apron fence); the first figure (10) is the strength of the wiring party; the second figure (16) the strength of the carrying party; the third figure (800) the average one-way carry in yards; and the last figure the time required to construct a 50-yard

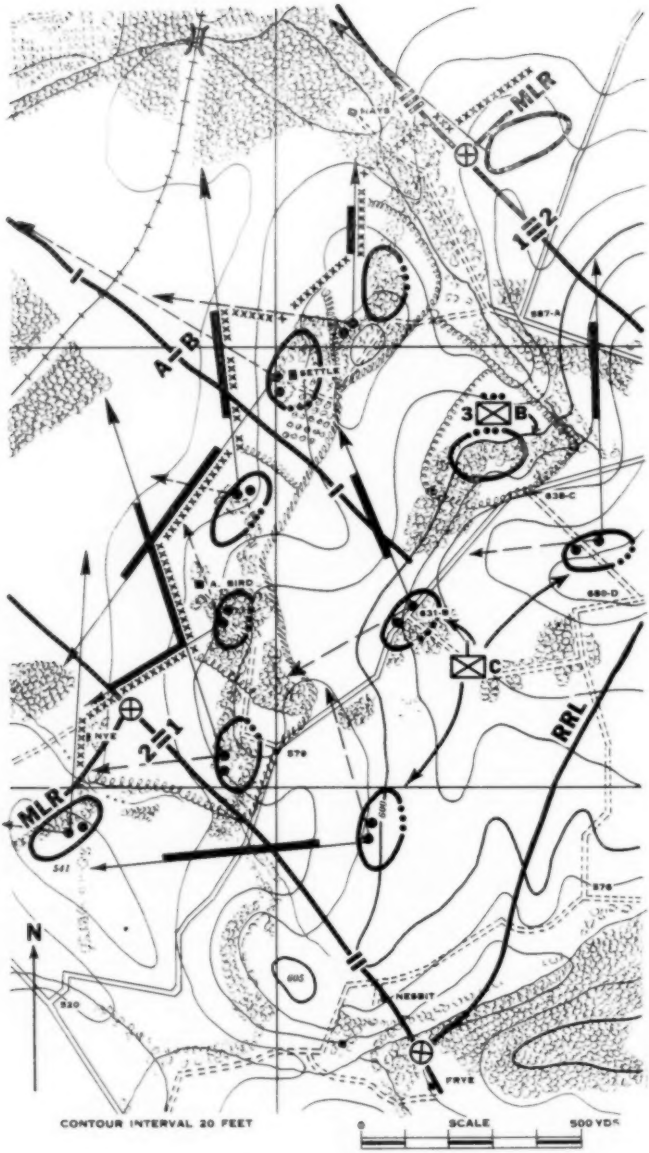


FIGURE 32.—Situation map, 1st Battalion 1st Infantry.

belt of wire. Should the carry be increased by 50% to 1200 yards, the size of the carrying party should be correspondingly increased (from 16 to 24) and the formula would be expressed T-10-*24*-*1200*-30.

Similarly work on the protective wire may be expressed as P-8-8-400-15. This means that a 50-yard belt of protective wire (only the four strand fence which is the center fence

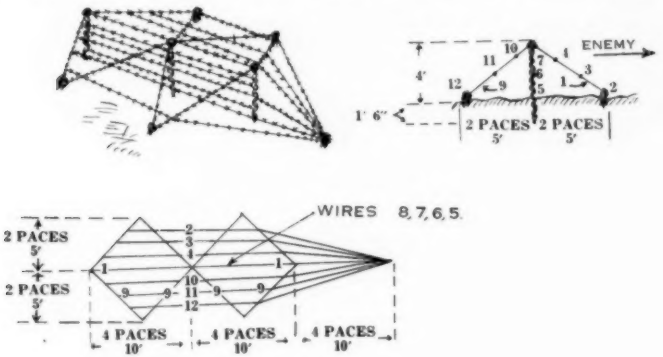


FIGURE 33.—Double-apron fence.

of the double-apron type without the aprons) can be constructed by a wiring party of eight men and a carrying party of eight men when the average carry is 400 yards, in a period of 15 minutes. Should the carry be 600 yards, the formula becomes 8-*12*-*600*-15.

Thus from the formula 10-16-800-30 for tactical wire and 8-8-400-15 for protective wire, the size of wiring and carrying parties for these two types of wire can be quickly determined as soon as the average length of carry is known. Work at night will require about fifty percent more time than during daylight by both the wiring and carrying parties.

ASSIGNMENT OF WORK

As a general rule each unit should do its own hasty fortification work. Should one unit complete its work far behind the others, it must, of course, be reinforced.

First let us consider only the rifle companies. As the front-line companies should give priority to their fields of fire, foxholes, and emplacements the battalion commander designates that all wiring will be done by Company C. In this tactical problem Companies A and B have been directed to organize portions of the MLR and Company C has been placed in battalion reserve and will organize the battalion reserve area. Each company is to dig its own standing

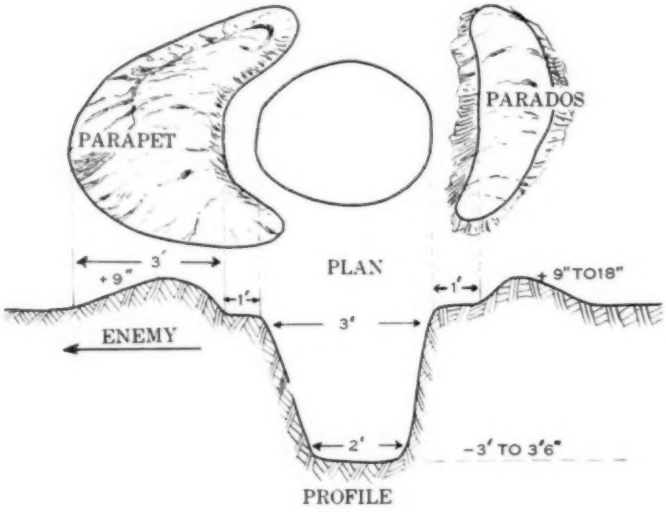


FIGURE 34.—Foxhole, standing type.

foxholes (see Figure 34) and connecting trenches (see Figure 35a) and do its own clearing. Front-line companies are also to dig supplementary foxholes as needed to protect their flank and rear. The light machine-gun and 60-mm mortar sections of the weapons platoon will dig their own emplacements and foxholes.

The personnel of platoon headquarters will probably be engaged in supervision and in other work. The eight men of the automatic rifle squad will prepare their own emplacements, and the details of the amount of work they will

have to accomplish is covered later in this article. This leaves three rifle squads in each rifle platoon available for the actual work of organizing the ground for the platoon. The squad leader and the assistant squad leader in each rifle squad will both work, as platoon headquarters will provide sufficient supervision. Each rifle company therefore has available 3 x 3 x 12=108 men for this work. Each rifle platoon requires a minimum of 41 foxholes (not counting those necessary for the automatic rifle squads.) Those for company headquarters can be constructed by headquarters personnel. The three rifle platoons in each front-line company would therefore have 3 x 41=123 plus, say, 60 supplementary foxholes on the flanks or a total of 183 foxholes.

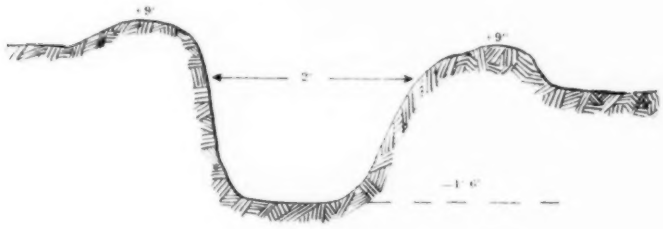


FIGURE 34a.—Shallow connecting trench.

Company C in battalion reserve would probably need, initally, only 120 foxholes to be constructed by the rifle platoons since supplementary positions will not be as necessary as for the front-line companies.

The total work to be done by the *rifle platoons* of the three rifle companies is summarized as follows: (Extent of clearing and length of connecting trenches estimated from map shown on Figure 32.)

	Foxholes	*Connecting Trench*	*Clearing*
Co A	207	1,200 yds	8,000 sq yds
Co B	207	1,000 yds	12,000 sq yds
Co C	120	500 yds	1,600 sq yds

The orders of the battalion commander also directed Company C to construct 2,000 yards of tactical wire and 3,600 yards of protective wire.

Work at night is only two thirds as effective as work in the daytime. Therefore supper for the men should be held after dark in order to get maximum advantage of the daylight rate. We will schedule it from 7:00 PM to 8:00 PM but assume a delay of only one-half hour as the men can be fed in two shifts. As there will be nine hours available for work in the dark, (7:30 PM to 4:30 AM) and at a different rate than the day work, the simplest method is to convert this period to an equivalent work time in daylight. As work at night is two-thirds as effective as in day, it comes to six hours. Therefore between 3:00 PM and 4:30 AM, tomorrow, there will be the equivalent of four plus six, or ten hours of work at *daytime* rate. One double apron wiring party can erect 100 yards an hour in daytime. With 2,000 yards to be erected, two double-apron parties will be required to complete this work by 4:30 AM. One protective wire party can erect 200 yards per hour in daytime. Two protective wire parties are therefore indicated for the 3,600 yards of protective wire since one party cannot complete it by dawn tomorrow morning. Two parties will finish the 3,600 yards of protective wire.

The average carry for the tactical wire is estimated as 1,000 yards; for the protective wire 600 yards. Applying T-10-16-800-30 for the tactical wire, we get for the 1,000-yard carry 10-*20-1000*-30. One combined tactical wiring and carrying party will require 10 plus 20=30 men. Applying P-8-8-400-15 for the protective wire, we get for the 600-yard carry 8-*12-600*-15. The combined protective wiring and carrying party will require 8 plus 12=20 men. As Company C is charged with both the tactical and protective wire, the two parties sent out on each type of wire will require (2 x 30) plus (2 x 20)=100 men out of the 108 it has available in the three rifle platoons. Work on the clearing of fields of fire should be completed before dark. One man can clear an area of about 200 square yards in one hour, this work consisting of removing high grass,

brush and low-hanging branches. As Company C has 1,600 square yards to be cleared, two men can complete this work in the four hours before dark. The remaining 6 men of this company would work on outlining foxholes for the men of that unit.

FIELDS OF FIRE

Companies A and B must complete the clearing of their fields of fire before dark. Company A's area will require 40 man-hours of work and Company B 60 man-hours, all of which must be completed within the four remaining hours of daylight. The former company will detail ten men and the latter fifteen for the work.

FOXHOLES AND CONNECTING TRENCH

The standing type foxhole requires the excavation of 20 cubic feet; the shallow connecting trench two cubic feet per linear foot of trench. The excavation to be completed by the rifle platoons of the two companies is as follows:

	Co A	*Co B*
Foxholes @ 20 cu ft	3,660 cu ft	3,660 cu ft
Connecting trench @ 2 cu ft	7,200 cu ft	6,000 cu ft
Total	10,860 cu ft	9,660 cu ft

Experience tables from the Engineer Field Manual give the following rates for excavation in daytime in *medium* soil (1 pick to 2 shovels) using full size engineer tools and not under fire:

Cubic feet of excavation per man

1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	9 hrs
23	37	49	60	71	81	91	100	108

After taking out the details for clearing, Company A has available 98 men, Company B 93 men. Applying these

to the excavation totals, we find:

Each man in Company A will be required to dig $\frac{10,860}{98}$ =111 cu ft.

Each man in Company B will be required to dig $\frac{9,660}{93}$ =104 cu ft.

Company A will therefore complete its work in the equivalent of about 9¼ hours of daylight work and Company B in 8 1/3 hours. As both these figures fall within the available 10 hours of daylight work, these two companies will have completed their hasty organization before 4:30 AM tomorrow. Company C will complete both the tactical and protective wiring of the entire position and will have cleared its own fields of fire. However only six men in this company (eight men after 7:30 PM) have been working on the foxholes and connecting trenches of the battalion reserve, an inadequate number to complete the necessary 120 foxholes and 500 yards of connecting trench. However, they at least can outline all the foxholes and the connecting trench. Of course there is not the same urgency for completion of the position of the battalion reserve as for the front-line companies.

EMPLACEMENTS FOR AUTOMATIC RIFLES

The standing hasty emplacement for the Browning automatic rifle, modified, requires excavation of about 85 cubic feet. There are two automatic rifles for each platoon in the company, or a total of six for the rifle company. Each gun should have both a principal and an alternate emplacement. With each gun in the hasty emplacement will be the gun crew of two men. However, as the war strength squad consists of eight men, four additional foxholes for the extra men (squad leader and ammunition carriers) will have to be constructed for each squad. The excavation work for the three automatic rifle squads in the rifle platoons can be stated as follows:

			Cubic Feet
12 standing emplacements	@	85	1020
12 foxholes	@	20	240
		Total	1260

$$\text{Amount per man} = \frac{1260}{24} = 52 \text{ cu ft.}$$

From the excavation table given above this will require only a little more than three hours of daylight work.

In the next paragraphs are discussed the amount of excavation that will be required for the light machine guns and the 60-mm mortars. From a consideration of the excavation needed for these three weapons it can be seen that there is sufficient time for the personnel of these three groups using the same tools that will be allotted to the weapons platoon to construct all the emplacements prior to 4:30 AM.

EMPLACEMENTS FOR LIGHT MACHINE GUNS

The standing hasty emplacement for the light machine gun requires excavation of about 85 cubic feet; the principal and alternate emplacements for each gun should be of this type. Supplementary emplacements might be of the shallow type in which the crew are prone. In this situation in addition to the principal emplacement there is to be one alternate standing emplacement and one supplementary shallow emplacement for each light machine gun. The light machine-gun section will, therefore, have to construct a total of eight standing emplacements and four shallow emplacements. With each gun there will be its crew of two men. However, as the war strength squad consists of seven men, there will be required three additional foxholes for the extra men (squad leader and ammunition carriers) in each squad. The excavation work required

of the light machine-gun section may therefore be summarized as follows:

		Cubic Feet
8 standing emplacements (LMG)	@ 85	680
4 shallow emplacements (LMG)	@ 15	60
6 foxholes	@ 20	120
	Total	860

Amount per man $= \frac{860}{14} = 61$ cu ft.

From the excavation table given above this will require only 4.1 hours of daylight work. If any additional clearing is required, we assume it will be done by the clearing details from the rifle platoons. The light machine-gun section will, therefore, complete its organization and have sufficient time to attend to ammunition and other details.

EMPLACEMENTS FOR 60-MM MORTARS

While rugged terrain will often permit the selection of defiladed positions for the mortars of the rifle companies, in this situation emplacements will be required for the three 60-mm mortars available to each rifle company on the defense. As in the case of the light machine-gun squads, it will be necessary to construct foxholes for the men not in the mortar emplacements. The work required of the mortar section may be summarized as follows:

		Cubic Feet
6 emplacements for 60-mm mortars	@ 60	360
4 foxholes for extra personnel	@ 20	80
	Total	440

As the two squads each have five men available for work, the amount per man is only 44 cubic feet which will require about 2.6 hours. The mortar section will therefore have plenty of time to devote to ammunition supply after completing its hasty fortifications.

DISTRIBUTION OF TOOLS

How should the tools have been distributed in this situation? The truck loaded with the battalion set is brought forward by the engineers who deliver the tools as designated by the battalion S-4. He determines their distribution as follows:

FIGURE 34b.—Infantry Tool Truck.

TOOLS FOR CLEARING

	Axes	*Saws*
Company A	5	5
Company B	8	7
Company C	1	1
Total for Rifle Platoons	14	13
Total Available	26	26

TOOLS FOR ENTRENCHING

	Shovels	*Picks*
Company A (less automatic rifle squads)	66	32 (98 men)
Company B (less automatic rifle squads)	62	31 (93 men)
Company C (less automatic rifle squads)	6	3 (8 men working after 7:30 PM)
Total for Rifle Platoons	134	66
Total Available	250	125

A review of the tool situation indicates there will be a sufficient number remaining for the weapons platoons of the three rifle companies and for the heavy weapons company. A probable distribution of these remaining tools would be as follows:

	Saws	*Axes*	*Shovels*	*Picks*
For Weapons Platoons of the 3 Rifle Cos (available for automatic rifle squads)	—	—	48	24
For Heavy Weapons Co	8	8	60	30
Still in Reserve	4	5	10	6

The tools listed as "Still in Reserve" would be used by personnel from the battalion headquarters detachment and from any attached unit such as a section from the regimental antitank platoon. In the usual situation the infantry tool truck will provide sufficient engineer tools for a battalion at full war strength—provided the erection of wire entanglements and the clearing of fields of fire are carried on concurrently with the entrenching. This will usually be the case.

THE BATTALION RESERVE

It will be recalled that Company C in battalion reserve had to furnish 100 men for the wiring parties. The 60 men in the tactical wire parties will be occupied until 4:30 AM while the 40 men engaged on the protective wire will

complete their work in the equivalent of $\frac{3,600}{400} = 9$ hours of daylight. Only six men (eight after 7:30 PM) were left in Company C to work on foxholes. These men should be used to outline and partially dig the foxholes for all the men of Company C. When the protective wire parties finish their work about 3:00 AM, they can pick up 40 tools from Company B, which will have completed its work by that time, and proceed to complete the individual foxholes already outlined for them. These should be completed by 5:00 AM. Similarly the tactical wire parties completing their wiring about 4:30 AM can pick up 60 tools from Company A, which will have completed its work by that time, and proceed to dig their foxholes which have already been outlined and partially dug.

HEAVY WEAPONS COMPANY

Both the caliber .50 machine-gun platoon and the 81-mm mortar platoon have a relatively small amount of work per man to prepare their hasty fortifications. The heavy machine-gun platoons on the other hand have a large number of guns to emplace on the defensive. We will check in detail the time required for its hasty fortifications. Each platoon will emplace eight guns. As it is customary to have an alternate and at least one supplementary emplacement for each gun, it is obvious that 24 emplacements will be required. As in the case of the light machine-gun units, there will also be required foxholes for the ammunition carriers who will not be in the emplacements. The work required by one platoon sommarizes as follows:

		Cubic Feet
24 standing emplacements	@ 130	3,120
16 foxholes	@ 20	320
	Total	3,440

$$\text{Amount per man} = \frac{3,440}{32} = 107.5 \text{ cu ft}$$

From the excavation table above, this will require the equivalent of 9 hours daylight work. Thus the heavy

machine-gun platoons theoretically can complete their work before daybreak. However, we have not considered clearing lanes of fire. The best practice is for the machine-gun squads to clear their own lanes of fire. If any considerable amount of clearing is necessary, the machine-gun platoons can not complete their work in time. However, as shown above, both the 81-mm mortar and the caliber .50 machine-gun platoons complete their work very soon. Here then is a pool from which the commander of the heavy weapons company can detail personnel to assist his machine gunners.

SUMMARY

In summary, the center of resistance in this situation can be "hastily" organized by daylight tomorrow except for part of the battalion reserve. All of the foxholes for this company in reserve will have been outlined and partially dug by daylight but all the standing type foxholes for the reserve and the necessary connecting trench will not be completed until about 6:00 AM. The front-line companies will be completely wired in both with tactical and protective wire but the battalion reserve will not be wired in. In all the work above, allowance has been made for continuous camouflage as the work progresses.

As for antitank ditches, the battalion commander will have to choose between substituting them for some of the work outlined above, or better yet, prevail on the regimental commander to use the regimental reserve to dig them.

The most important lesson we can learn from this study is that the 6-hour plan (Mailing List, Chapter 8, Volume VII (1933)) for digging in, which worked so well with the old type infantry battalion, will not fit the new infantry organization. Man power has been reduced; the number of weapons to be emplaced has been greatly increased. No set number of hours will apply for all tactical situations but the soldier will have to work more than an 8-hour day; on the average he will have to work about 10 hours when the battalion commander decides to dig in. Moreover for every hour of darkness, he will have to work an extra half hour.

CHAPTER 8

Field Artillery in Support of Infantry

Artillery is the principal supporting arm of the infantry. Without artillery, and plenty of ammunition for artillery, attacks against modern troops cannot succeed. The best method to support (assist) the infantry; the only method that will enable infantry attacks to succeed, is for the artillery to destroy or neutralize the enemy's defenses.

Field artillery is an arm of relatively long-range combat. Fire is its sole means of combat. It contributes to the movement of the entire force through the fire support it renders other arms; its own movement is for the purpose of insuring this support. Field artillery has two principal missions.

1. IT SUPPORTS (ASSISTS) THE INFANTRY BY FIRE, ENGAGING THOSE TARGETS WHICH ARE MOST DANGEROUS TO THE SUPPORTED UNIT.

2. IT GIVES DEPTH TO COMBAT BY COUNTER-BATTERY FIRE, BY ATTACKING HOSTILE RESERVES, AND BY DISLOCATING THE ENEMY'S COMMUNICATION SYSTEM AND AGENCIES OF COMMAND.

In order to carry out its two principal missions, the field artillery is ordinarily subdivided for combat so that part is allotted to the support of particular units and the remainder retained under direction of the chief of artillery of the command.

DIVISION ARTILLERY

The artillery mission of the several units are adapted to the characteristics of the materiel with which they are equipped and the relative importance of the objectives. Division artillery is most effective in fire on personnel. It also is employed to neutralize enemy observation, to interdict hostile movements, and to assist the corps artillery with counterbattery missions. In general, artillery should not be called upon to deal with small targets within range of the infantry weapons.

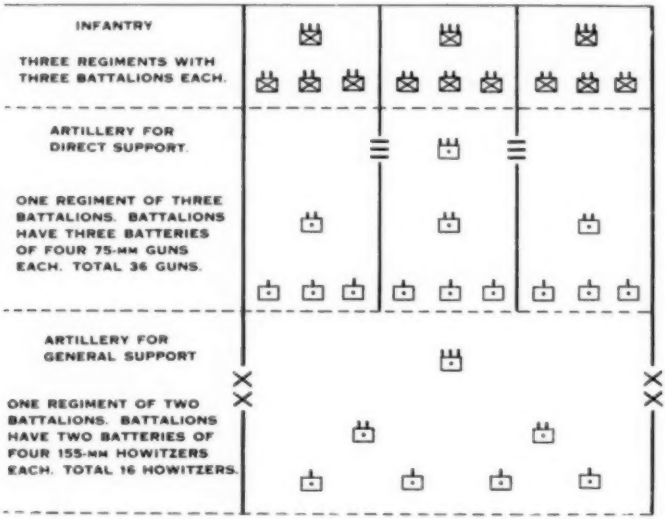

INFANTRY
THREE REGIMENTS WITH THREE BATTALIONS EACH.
ARTILLERY FOR DIRECT SUPPORT.
ONE REGIMENT OF THREE BATTALIONS. BATTALIONS HAVE THREE BATTERIES OF FOUR 75-MM GUNS EACH. TOTAL 36 GUNS.
ARTILLERY FOR GENERAL SUPPORT
ONE REGIMENT OF TWO BATTALIONS. BATTALIONS HAVE TWO BATTERIES OF FOUR 155-MM HOWITZERS EACH. TOTAL 16 HOWITZERS.

FIGURE 35.—Organic Field Artillery-Infantry Division, 1939 (Triangular).

In the infantry division certain field artillery units are assigned to the *direct suport* of specified infantry units and the remainder are retained in *general support* of the division as a whole. The assignment of a direct support mission to part of the field artillery permits direct cooperation with the supported units.

Artillery is in direct support when it has been given the mission of providing artillery fires for a designated infantry unit. For example; "The 1st Battalion 7th Field Artillery will be in direct support of the 16th Infantry". Rendering prompt and full assistance to the designated infantry units is the primary mission of the artillery in direct support. However, it should be remembered that it is not given orders by the infantry commander. It remains under the centralized control of the division commander, thereby permitting the concentration of all artillery fire of the division on any important target. Artillery is most effective when it can be used in mass.

Artillery is in general support when given the mission of supporting the entire division. This type of support facilitates the concentration of artillery fire but does not provide for close cooperation with subordinate infantry units.

An artillery unit, either in direct or general support, may also be given the mission of reinforcing the fires of some other artillery unit. Usually this mission is included in, or is subsidiary to, the principal mission of the reinforcing unit.

The artillery of the infantry division (1939) consists of one regiment of light artillery, 75-mm guns, for the execution of the direct support missions, and one regiment of medium artillery, 155-mm howitzers, for the execution of the general support missions. (See Figure 35.)

The light regiment has three battalions, of three batteries each, with four guns to a battery. This makes available one light battalion of twelve 75-mm guns for the direct support of each infantry regiment. When one of the infantry regiments is in reserve, the light artillery battalion which normally furnishes it with direct support, is given, temporarily, a general support mission. But it is prepared to support its own infantry regiment when that regiment enters into action. No artillery is held in reserve or readiness, unless so ordered by the division commander.

The howitzer regiment consists of two battalions of two batteries each. Each battery has four 155-mm howitzers.

The howitzer regiment habitually is in general support. One or both battalions may be assigned a mission of reinforcing the 75-mm gun battalions which are in direct support. In this case, the howitzer battalion receives its fire missions by liaison directly with the gun battalion. A howitzer battalion ordinarliy does not undertake direct liaison with the infantry.

FIGURE 36.—75-mm gun in firing position. This is the light artillery which is available for direct support missions.

The division assigns fire missions through the field artillery regimental commanders. It is exceptional for division orders to indicate positions for the artillery. Normally, positions are ordered by the field artillery regimental commanders, and usually should be in the sector or zone of action of the unit supported. Unless the division order specifies the hour of opening fire or imposes other restrictions, fire is opened as soon as the batteries are in position, or as ordered by the artillery regimental commanders, who also control the nature and the density of fire.

The headquarters of the infantry division (Triangular Division-1939) has an artillery section consisting of a brigadier general, four officer assistants, and fifteen enlisted men. The duties of the artillery brigadier general have not as yet been specifically determined. In general his more important duties appear to be about as follows:

1. He issues orders in the name of the division commander to the artillery regimental commanders.

2. He is the tactical and technical advisor to the division commander and the division staff on artillery.

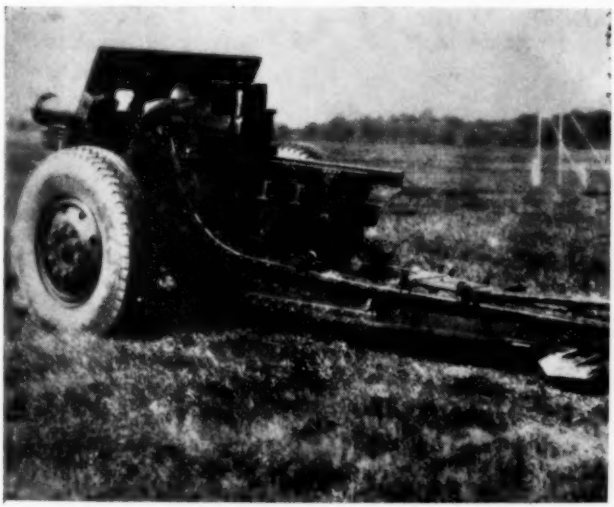


FIGURE 37.—155-mm howitzer. This is the medium artillery which is used for general support missions.

3. He prepares plans for the artillery including recommendations for the allotment of artillery to support infantry units.

4. He is responsible for artillery liaison with corps artillery, with the artillery of adjoining divisions, and with the two regiments of division artillery.

5. He controls the allocation and distribution of ammunition to the artillery regiments.

6. He coordinates, within limits prescribed by the division commander, the use of the divisional artillery and he prepares plans for the use of aerial observation for artillery. His section is responsible for the survey operations incident to the establishment of the artillery in position, and the collection and dissemination of periodic meteorological data.

COMBAT TEAMS

An infantry regiment and a battalion of field artillery form a combat team. It is advantageous to have the same infantry regiment and the artillery battalion work habitually together.

WHAT ARE THE PRINCIPAL CONTACTS BETWEEN THE INFANTRY AND THE ARTILLERY?

1. COMMAND LIAISON.

2. ORGANIC LIAISON SECTIONS.

3. BATTALION AND BATTERY OBSERVERS.

Liaison is the linking together of supporting artillery units and the supported infantry units or of different units of artillery. The maintenance of liaison between the artillery and the infantry is the responsibility of the artillery commander.

As soon as the artillery battalion is placed in the combat team, with a mission of direct support, the artillery commander establishes "command liaison" with the infantry commander. Command liaison means the establishment and maintenance of contact between the artillery battalion commander and the infantry commander whose unit the

artillery is supporting. In this combination the highest degree of cooperative and coordinated planning of artillery fires is sought. Hence, it is distinctly advantageous to have a particular artillery battalion operate with the same infantry regiment at all times, whether in combat, bivouac, or on the march.

Each light artillery battalion has two organic liaison sections. One of these sections is sent to each front-line battalion of infantry. They must be located at a point where observation of the battalion sector, or zone of action, can be obtained. Usually, this will be at the observation post of the infantry battalion. In addition, they maintain

FIGURE 37a.—Personnel and equipment of artillery liaison section.

contact with the command post of the infantry battalion, as close association with the infantry battalion commander as well as good observation is essential. To accomplish these two requirements a wire line is run by artillery personnel from the artillery fire direction center to the infantry battalion command post. In case the infantry has been able to run a telephone line forward to the infantry observation post, the artillery will run a parallel line to the same observation post for the use of the artillery

liaison officer. In case no telephone communications can be established, the artillery liaison officer will communicate with the fire direction center by radio. When all three infantry battalions are in the front line, another artillery liaison section must be improvised. The liaison section can communicate by means of radio, telephone, visual signaling, and by messenger. The artillery liaison officer keeps the infantry commander informed of the possibilities of artillery fire support, and keeps the artillery battalion commander informed as to the needs and the location of the supported unit. The artillery liaison officer is prepared to adjust the artillery fire delivered in the sector of the infantry battalion.

FIGURE 38.—Means of communication with battalion liaison section.

Each battery has observers who establish an observation post. When suitable observation posts are lacking, this personnel, operating mobile observation posts, can function with front-line infantry units. In this latter case, the battery observers should communicate direct with the artillery fire direction center. These observation posts

FIGURE 39.—Personnel of liaison section sending data to fire direction center.

should be located close to the front line infantry companies as they must be able to observe the artillery fire.

When battery observers are operating close to the infantry front line, they may be directed to function with a particular infantry unit, such as a company. This will depend upon the situation and the desires of the two (infantry-artillery) battalion commanders. The observers should receive instructions from the artillery battalion commander to secure observation in the sector, zone of action, or on a flank position, where observation is required.

FIGURE 40.—Fire direction center in operation.

The artillery fire direction center is an installation of the artillery battalion. This is where the fire of the batteries is controlled and directed. It can be compared to a telephone central where calls come in (in this case from the battery observers, the battalion liaison officers or the aerial observers), and are switched to the proper party, (the firing units).

Aerial observers should also be utilized when visibility is suitable. Reports from aerial observers go direct to the fire direction center.

These liaison contacts are the channels through which fire support is arranged and coordinated with the infantry. They are the means by which the infantry calls for additional support, or requests adjustments in prearranged fires.

It is convenient for the artillery liaison officer to have a ground scale in the target area. Such a scale can be obtained by requesting one of the batteries to fire what is known as a "ladder". The battery fires four rounds in the direction of the base point, (a point upon which the batteries adjust their fire for registration). Each round is fired with a difference in range of two hundred yards, which gives an approximate six hundred yard scale and also indicates the direction of fire of the battery. The line made by these four bursts on the ground is the base point line. When a target of opportunity appears, the observer, remembering the position of his scale on the ground, can adjust fire by designating the location of the target with reference to the base point line. For example, a target is located 300 yards to the right and 400 yards beyond the base point. His command would be "Base Point (is) 300 Left, 400 Short, Machine Guns, Can Observe." The battery then fires at the point as indicated and the liaison officer observes the bursts with reference to the target. Adjustment is continued in a like manner.

If the infantry battalion commander or staff officers are present when the "ladder" is fired they can also use the scale for reference. If an emergency should occur where the artillery observer becomes a casualty, the infantryman can adjust the artillery fire by this simple liaison method. During artillery demonstrations at The Infantry School, students are selected at random from among the class and requested to fire at targets selected by other students. They have been able to neutralzie the targets within a few minutes.

COMMAND POSTS

In establishing the command post of an infantry battalion which has a mission of direct support, the commander must consider the following three important factors.

1. His command post should be located where his control and fire direction functions can best be performed.

2. His command post should be located where command liaison with the supporting unit commander is facilitated. The artillery commander is responsible for continuous command liaison with the supported unit. When he cannot be with the supported unit commander in person, he habitually keeps an artillery staff representative at the infantry command post.

3. Communication between the two command posts is established and maintained by the artillery unit. Therefore, in order to simplify the functions of command liaison and communication, the command post of the supporting artillery unit should be located, at least initially, in close proximity to the command post of the supported unit.

In terrain where suitable position areas for light artillery (75-mm guns) are limited, it may not be practicable, even initially, to establish the infantry and artillery command posts close to each other. In such a case the artillery command post is located, primarily, for the purpose of facilitating control and fire direction. Communication to faciltate command liaison is maintained by extending the artillery communication system, normally a wire line, to the command post of the supported unit.

The subsequent displacements of the artillery command post will be determined largely by the range of the pieces, and the new position areas for the batteries. The supported infantry unit will displace its command post more often than the artillery. Therefore it will usually be impracticable for the successive locations of the command post of artillery in direct support, to conform to those of the infantry. However, when the command post of the artillery is displaced, it should be re-established close to the command

post of the supported unit, if by doing so, artillery control and fire direction are not impaired.

Within the artillery command post some dispersion is required, in order to provide adequate space for the operation of command, staff, and communication agencies, and to enable groups and units to take advantage of cover and concealment. Likewise when the artillery and infantry command posts are located in the same general vicinity, some separation is necessary for similar purposes.

THE MISSION IS THE CONTROLLING FACTOR IN THE PREPARATION OF THE ARTILLERY PLAN OF FIRES.

1. IT MUST FIT THE PLAN OF THE SUPPORTED UNIT.

2. ARTILLERY REPRESENTATIVES MUST WORK WITH THE INFANTRY.

3. THE ARTILLERY PLAN AND THE INFANTRY PLAN ARE DEVELOPED CONCURRENTLY.

4. THE TWO PLANS ARE ADJUSTED SO THAT ALL LINES OF ENEMY ACTION CAN BE MET WITH FIRE.

FIGURE 41.—Artillery missions.

THE ARTILLERY PLAN

The division artillery plan depends upon the division commander's decision for the employment of his unit.

During the preliminary preparations of infantry plans for combat, the infantry staff is engaged in preparing the infantry plan of operations. The infantry staff has neither the time nor the information for preparing the details of the artillery support which may be required, except in a

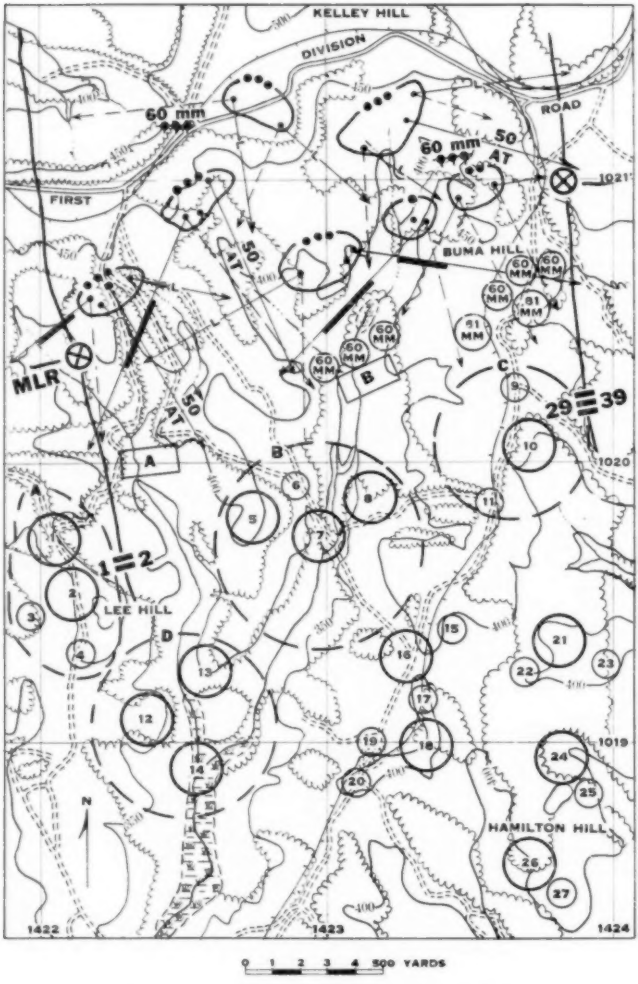


FIGURE 42.—Infantry and artillery plan of fire.

general manner. Usually this is limited to an indication of the supporting artillery fires which may be required.

It is of the utmost importance that representatives of the artillery commander be present with the infantry commander (regiment and battalion) during the early phases of the infantry preparations for the operation. By means of these contacts the artillery commander secures early information of the plans of the supported infantry units. This close collaboration permits the artillery commander to prepare his detailed plan of artillery fire support concurrently with the plan for the infantry fires prepared by the infantry commander.

The artillery must not wait for the completed infantry plan before starting its own plan of fires. It must not depend upon the infantry for the selection of all targets. Artillery must be able to fire promptly, despite any absence of requests for fire and incomplete knowledge of the friendly and hostile situation.

On completion, the artillery plan is sent to the supported infantry unit. By this time the detailed infantry plan should be worked out. The two plans are then adjusted so as to insure that all enemy lines of action can be met with both infantry and artillery fire.

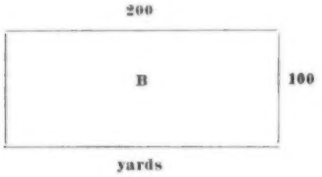
In order to indicate his plan of fires, the artillery commander sends a map or an overlay to the infantry commander. This plan will show the locations of concentrations, barrages, and certain artillery technical data. These data may include such items as base points, check points, and check concentrations, which may be used as reference points, both by the infantry and the artillery in designating the location of targets. The artillery also uses them as a means of checking the schedule of fires, and to facilitate the shifting of fire from one area to another by either the aerial and battery observers, or by the liaison officers.

METHOD OF DESIGNATING TARGETS

On the ground.—Targets should be designated by location with reference to some known terrain feature or identified point. The frontage, depth, and nature of the

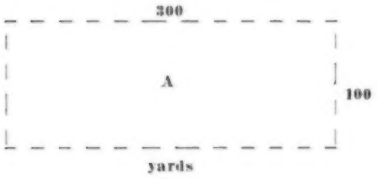
target should be given, if known. The urgency for neutralization or destruction should be indicated.

On maps or map substitutes.—A normal barrage is represented on a map, chart, aerial photograph or overlay by means of a full-line rectangle, the longer axis of which is the barrage line. The inside of the rectangle is marked with the letter designation of the battery to which it is assigned. For a 75-mm battery the rectangle is shown as being 100 x 200 yards.



Normal barrage by Battery B.

An emergency barrage is represented by means of a broken-line rectangle, the longer axis of which is the barrage line. The inside of the rectangle is marked with the letter designation of the battery (where it is fired by a battery from another regiment, the regimental number is also included) to which it is assigned. For a 75-mm battery, the rectangle may be as large as 100 x 300 yards.



Emergency barrage by Battery A.

Concentrations (fire delivered on an area) are shown as circles whose diameters are multiples of 100 yards. Within each circle is placed the number of the concentration. They are of 100, 200, and 300 yards in diameter for the 75-mm guns, and up to 400 yards for the 155-mm howitzers. The

size of the area selected depends upon the size of the target and the expected accuracy of the firing data.

Artillery Concentration
No. 15.

HOW CLOSE MAY ARTILLERY FIRE BE PLACED TO OUR INFANTRY?

THIS WILL DEPEND UPON:

1. THE NATURAL DISPERSION CAUSED BY THE WEAPON AND THE AMMUNITION.

2. THE MAXIMUM DISTANCE TO WHICH LARGE FRAGMENTS WILL BE THROWN.

3. THE SHELTER AVAILABLE TO OUR TROOPS.

4. WHETHER OR NOT OBSERVATION IS AVAILABLE FOR ADJUSTMENT OF THE FIRE.

SAFETY FACTORS

When artillery is supporting infantry with overhead fire, the distances at which this fire may be placed in front of our own troops will vary, depending upon the following factors:

1. The natural dispersion of the projectiles around the center of impact caused by the particular type of weapon when firing a particular type of ammunition. This dispersion varies with the range at which the guns are firing; in general dispersion increases with the range. The natural

process of erosion of the bore of the weapon results in loss of range and accuracy, and, consequently, increases the amount of dispersion above that which is shown in the firing tables.

2. The maximum distance to which large fragments are likely to be thrown from the bursting shell. The bulk of the fragments are propelled from the sides of the projectile. A few are thrown from the base and nose. Therefore more fragments will be thrown toward our troops when they are located at right angles to the side of the bursting projectile.

3. The shelter available for our troops. Those which are defiladed in holes or trenches will have considerable protection against shell fragments.

4. Whether the fire can be adjusted by means of ground observation, or whether it must be fired without adjustment by using a map or map substitute.

In preparing the following table, one-half the length of the dispersion scale was used, adding thereto the effective radius of large fragments, (150 yards for the 75-mm, and 500 yards for the 155-mm). However, only a few large fragments are thrown these distances. The area considered to be covered effectively by shell fragments is 5 yards in depth by 30 yards in width for the 75-mm gun; and 9 by 70 yards for the 155-mm howitzer.

THESE ARE NOT PEACE-TIME SAFETY FACTORS.

Range at which the weapon is firing	*Safety factors in yards from friendly troops. (No shelter available. Fire adjusted with good observation.)*	
	75-mm gun	155-mm howitzer
	Common shell. Maximum Range 8800 (Mk. I)	Maximum Range 12,400 yards
2000 yards	220	590
4000 yards	270	620
6000 yards	370	660

FIGURE 43.—Safety Factors (using high explosive shell).

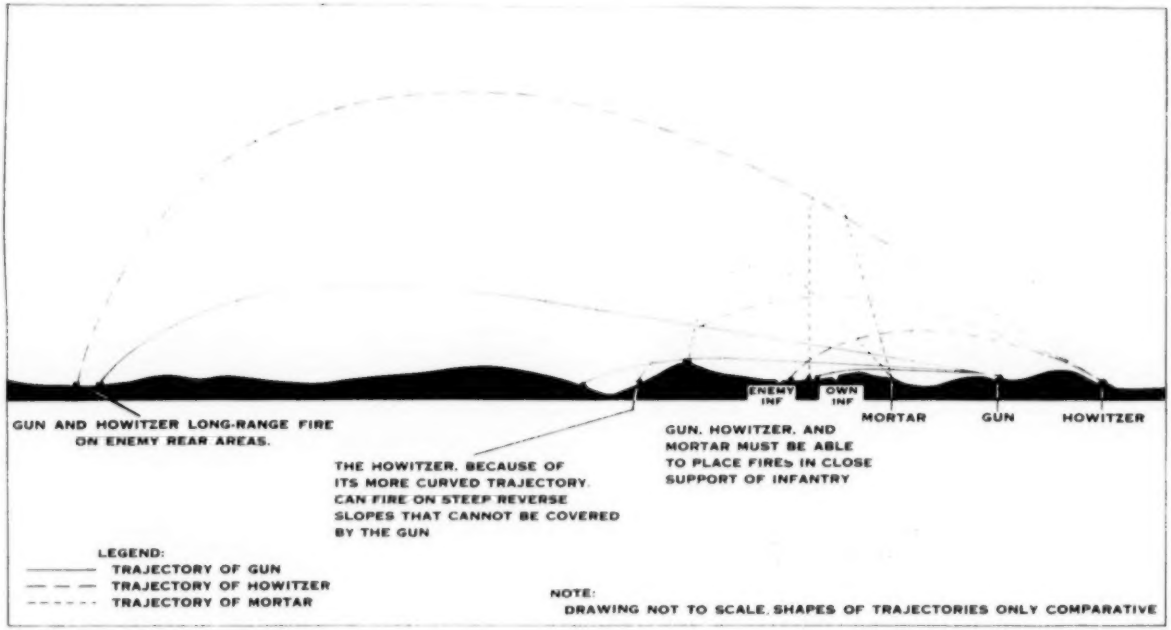
NOTES.—1. When no observation is available, and the data can be prepared from a good map or map substitute, corrected for weather conditions, the safety factors should be increased by at least 100 yards.

2. When troops are defiladed from shell fragments, such as by means of trenches or holes, these safety factors may be reduced by as much as 50 yards for the 75-mm gun, and 300 yards for the 155-mm howitzer.

3. In the defense, fires such as the normal barrage may be placed from 200 to 400 yards in front of the main line of resistance, if adjustment is made with ground observation. These fires can be placed nearer to the troops, if the latter are protected by trenches. When suitable observation is not available, the data for such fires must be prepared from maps or map substitutes. In this case the fires should not be placed closer than 300 yards to the main line of resistance. The range at which each battery is to fire should be considered in each case when locating a barrage. The official World War records of our 2d Division indicate that normal barrages were usually located from 300 to 550 yards in front of our front lines.

4. Attacking troops should follow their supporting artillery fire as closely as safety conditions permit. From the table it can be seen that safe distances, without shelter and with observed fire, vary for the 75-mm from about 200 yards to 370 yards (at a range of 6000 yards), and for fire prepared from a map or map substitute safe distances vary from about 300 yards to 600 yards.

THE TRAJECTORY OF ARTILLERY PROJECTILES DOES NOT ENDANGER THE INFANTRY EXCEPT WHEN THEY ARE VERY NEAR THE CANNON OR NEAR THE TARGET.


ENEMY INF
OWN INF
MORTAR
GUN
HOWITZER
GUN AND HOWITZER LONG-RANGE FIRE ON ENEMY REAR AREAS.
THE HOWITZER, BECAUSE OF ITS MORE CURVED TRAJECTORY, CAN FIRE ON STEEP REVERSE SLOPES THAT CANNOT BE COVERED BY THE GUN
GUN, HOWITZER, AND MORTAR MUST BE ABLE TO PLACE FIRES IN CLOSE SUPPORT OF INFANTRY
LEGEND:
TRAJECTORY OF GUN
TRAJECTORY OF HOWITZER
TRAJECTORY OF MORTAR
NOTE:
DRAWING NOT TO SCALE. SHAPES OF TRAJECTORIES ONLY COMPARATIVE

MAXIMUM ORDINATE IN FEET

Range	*81-mm Mortar*	*75-mm Gun*		*155-mm Howitzer*	
Yards		*Reduced Charge*	*Normal Charge*	*High Velocity*	
500	585	19	4	3	19
1000	1038	46	16	12	81
2000	3456	158	77	57	352
3000	3906	409	215	150	895
7000		5180	2540	1482	2395
8000			4058	2154	3580
12000				7792	8155

FIGURE 44.—Comparison of the trajectories of the 75-mm gun, the 155-mm howitzer and the 81-mm mortar.

SECURING ARTILLERY FIRE

The principal infantry-artillery means through which artillery fire support may be obtained are as follows:

1. Conferences between the artillery and the infantry commanders or their representatives (command liaison).
2. The organic artillery liaison sections with each front-line battalion of infantry.

FIGURE 45.—Artillery liaison officer explaining artillery plan of fires to infantry battalion commander.

3. Messages sent by the infantry commander through the infantry communication system to the artillery battalion.
4. By the use of overlays, maps, or aerial photographs, prepared by the infantry and sent to the artillery battalion.
5. Contacts with battery observation personnel when operating mobile observation posts close to the infantry.
6. By the use of prearranged visual signals.
7. Indirectly through aerial observers.

The following table indicates in a general manner how infantry requests for artillery fire may be made.

Nature of request	*By whom made*	*To whom made*
Prearranged fires.	Infantry regimental commander generally.	Commander of artillery in direct support.
Call for execution of prearranged fires.	Infantry battalion commander unless otherwise ordered.	Artillery liaison officer.
Signal for execution of prearranged fires.	Infantry battalion commander usually. Company commander if specifically authorized.	Direct to firing unit.
To delay or advance the time of delivery of scheduled fires.	Infantry regimental commander, usually on request of an infantry battalion commander.	Commander of artillery in direct support.
Requests for fire on areas not covered by prearranged fires.	Infantry company commander.	Available artillery observers.
	Infantry battalion commander.	Artillery liaison officer.
To initiate the execution of a new series of prearranged fires.	Infantry regimental commander.	Commander of artillery in direct support.

Requests by an infantry battalion commander for fire on points outside of the battalion zone of action (or sector), and included in the regimental zone of action (or sector), usually are sent to the infantry regimental commander, who transmits them to the artillery commander furnishing direct support. Such fires will be furnished if they do not conflict with the fire support of other units of the regiment.

Requests by an infantry battalion commander for fire on points outside of the regimental zone of action (or sector) are usually transmitted to higher authority.

When requesting a transfer of artillery fire to new targets the infantry commander should specify the old targets on which the continuation of fire is essential.

Signals should be kept to a minimum, and the location from which the signal is to be given must be known by the artillery.

Precise designation of the targets for artillery must be made by the infantry, otherwise much ammunition will be

FIGURE 46.—Infantry battalion commander requesting artillery supporting fire.

wasted. Maps, charts, photographs, or overlays should be used where possible, otherwise all targets must be pointed out on the ground.

The infantry must exercise care in requesting a repetition of fires after they have been lifted. The location of the infantry front-line units must be known, and all subordinate elements should be informed in advance.

FIELD ARTILLERY SHOULD HAVE SUITABLE MAPS OR MAP SUBSTITUTES. WITHOUT THESE YOU CANNOT GET SUPPORT AT NIGHT, OR DURING PERIODS OF LOW VISIBILITY SUCH AS WOULD BE CAUSED BY FOG, GROUND HAZE, SMOKE OR DUST. THESE CONDITIONS ARE COMMON ON THE BATTLEFIELD ESPECIALLY WHEN THE ATTACK STARTS AT DAYLIGHT.

IF POSITIONS MUST BE OCCUPIED AT NIGHT THE ARTILLERY RECONNAISSANCE PARTIES SHOULD ENTER THE AREA *AT LEAST* TWO HOURS BEFORE DARK.

IF SECRECY IS NOT PARAMOUNT A SMALL PART OF THE ARTILLERY SHOULD ENTER THE AREA AND REGISTER BEFORE DARK.

WHEN REGISTRATION OF THE PIECES IS IMPOSSIBLE PERIODIC METEOROLOGICAL INFORMATION SHOULD BE MADE AVAILABLE TO THE ARTILLERY SO THAT THE FIRING DATA CAN BE CORRECTED FOR WEATHER CONDITIONS.

KEEP YOUR ARTILLERY UNDER CENTRALIZED CONTROL AS LONG AS THE SITUATION WILL PERMIT. USE IT IN MASS WITH SUDDEN AND SURPRISE EFFECT. KEEP TACTICAL UNITS (BATTALIONS) TOGETHER WHEREVER POSSIBLE.

OFFENSIVE COMBAT

The tasks of the division artillery in offensive combat are as follows:

1. To furnish direct supporting fires for the infantry.
2. To furnish general supporting fires for the infantry by counterbattery, by attacking hostile reserves, and by

dislocating the enemy's communication system and agencies of command.

In offensive situations, artillery fires are prepared so as to furnish support during each phase or period of the operation. They are planned and coordinated jointly by the artillery and infantry commanders. Fires may be as follows:

1. *During the period of first contact.*—As in a meeting engagement:

a. Fires in close support of the advance guard.

b. Long-range fires to force hostile deployment and to retard hostile movements.

FIGURE 47.—Preparing the way for the advance of the infantry.

c. Neutralization of hostile artillery.

2. *During the development of the command for the attack:*

a. Fires in continuation of those listed in 1 above.

b. Fires to cover the deployment of the command.

3. *During the period immediately preceding the attack:* Artillery fire delivered during this phase is called "the artillery preparation".

a. The decision to have an artillery preparation and the duration of this preparation are decisions of the division commander. Such decisions depend upon the following factors:

(1) Information as to known suitable objectives for artillery fire.

(2) Availability of ammunition.

(3) Necessity for secrecy or surprise.

b. The usual targets are the forward enemy installations, command and observation systems, and hostile artillery. For light artillery units, the bulk of the artillery preparation will be placed on the forward battle position.

FIGURE 48.—Artillery battery prepared to furnish direct support.

4. *During the period of the attack*:

a. These fires are divided into three general types:

(1) Concentrations—fires on hostile dispositions, formations or weapons. They are fired either on a time schedule, on call, or on signal from the supported infantry unit.

(2) Fires on targets of opportunity—such as troops in movement or hostile weapons whose locations have not been

disclosed previously, and for which fires have not been prearranged. These objectives should be definitely located on the ground by the supported unit, by the artillery observers, or by the aerial observers.

(3) Rolling barrages—Fire on successive general lines with a definite rate of advance.

(a) For an effective rolling barrage at least one light battery should be furnished for each 100 yards of frontage, and in addition one light battery should be provided for each 200 yards of frontage for raking fire in advance of the rolling barrage.

(b) Furthermore, at least seven batteries of medium artillery should be provided for each 1,000 yards of frontage for the purpose of reinforcing and adding depth to the fires of the light artillery.

(c) Finally, approximately six medium batteries should be provided for each 1,000 yards of frontage for counterbattery fires.

(d) As a guide, the normal frontage of an assault infantry battalion ranges from 500 to 1,000 yards. Hence, the division artillery must be augmented greatly if this type of fire is to be employed.

b. Supporting fires are delivered by units in direct support and in general support as follows:

(1) By units in direct support, usually light artillery.

(a) Fires to assist the advance of the supported units.

(b) Fires to assist the advance of units other than those directly supported (fires in contingent zones).

(c) The objectives are those hostile formations, tactical localities, and weapons or installations which may hold up the advance of the supported infantry unit.

(2) By units in general support, usually medium artillery.

(a) Neutralization of hostile artillery (counterbattery).

(b) Fires to reinforce and add depth to the fires of light artillery.

(c) During the advance of the infantry rifle company, upon its *initial* objective, artillery fire may be executed on

a time schedule. Especially will this be the case when an artillery preparation has been fired.

(d) Beyond the first tactical locality where enemy resistance is encountered, it is impracticable for infantry to follow artillery fire on a time schedule. Prearranged concentrations must be executed on signal or on call in order to furnish each rifle company with subsequent close supporting fire to permit it to continue the advance. In addition to prearranged concentrations, whenever targets of opportunity appear—targets for which no prearranged fires have been prepared—other artillery fires are adjusted so as to engage these targets of opportunity. Even when an intensive rolling barrage is employed—which is always executed on a time schedule—the organic division light artillery, after participating in the preliminary phase, should remain in its own infantry-artillery combat teams in order to render direct fire support in overcoming enemy resistance which has not been neutralized by the rolling barrage.

c. The procedure of firing artillery on call, on signal, and by observation, places absolute reliance on communications. In the event that all means of communication between the supported infantry unit and the artillery in direct support fail, the artillery should maintain neutralization on the targets last requested by the infantry until communication is re-established. The infantry should not advance until a positive indication is received by them that the artillery fire has been advanced as requested. The infantry can usually observe the lifting of the artillery fire, and in addition the artillery can, by prearrangement, mark the end of fire on any given area, by firing a round of smoke shell or by firing a group of air bursts above the area.

f. While the infantry halts to reorganize following the capture of an intermediate area of enemy resistance, the artillery should be prepared to execute fires of a defensive nature.

g. When the objective for the division as a whole has been captured and—

(1) When no further immediate advance against the hostile force is contemplated, the infantry proceeds to organize the captured objective. At this time artillery executes defensive fires for covering this organization.

(2) When the attack is to be continued the artillery and the infantry commanders jointly plan and coordinate supporting fires on new potential areas of enemy resistance.

BATTERY POSITIONS

In offensive combat, artillery should be emplaced well forward insuring greater depth of fire support from initial positions. For units in direct support, positions should be in the zone of action of the supported unit. Usually, the terrain included in a zone extending from 1,000 to 3,000 yards in rear of the line of departure will contain suitable initial positions for light artillery. Similar positions usually can be found for medium artillery in a zone extending from 1,000 to 4,500 yards in rear of the line of departure.

A close grouping of batteries within the battalion tends to provide simple communication and efficient fire direction. Batteries should only be separated sufficiently to perform their missions, to provide unit protection from fire, and to provide concealment from ground and aerial observation.

PURSUIT

When a pursuit is ordered and it is necessary for the infantry to reorganize (that is, when there are no formed reserves ready for immediate use), the artillery displaces forward promptly. Until the infantry is ready to take up the pursuit at least part of the artillery utilizes its long-range fires to retard the enemy's retreat by interdicting his routes of withdrawal. Aerial observation should be available for the adjustment of this fire.

The rapidly changing situations during a pursuit necessitates frequent displacement of the artillery. The broad

front on which the pursuit is conducted requires considerable dispersion of artillery installations. Therefore, the light artillery of the division may be attached to infantry units.

In order to enable the division commander to influence the action of the division as a whole the medium artillery usually will be held in general support.

Appropriate targets for this artillery are:

1. The enemy's covering forces.
2. Troop assemblies.
3. Formed hostile units in columns.
4. Road centers, and important defiles on the routes of hostile retreat.
5. The enemy's artillery.

DEFENSIVE COMBAT

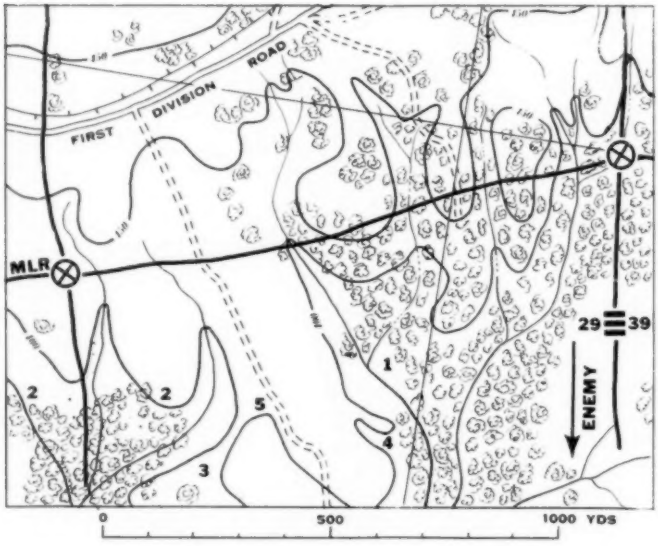
The plan of employment of division artillery is based upon the plan of defense of the higher commander and upon the plan of defense of the supported unit. The extent of planned fires will be a minimum in the defense of a position which is hastily assumed and a maximum in a carefully prepared zone of defense. The tasks of division artillery in defensive combat are as follows:

1. To prevent the enemy from launching an attack.
2. To assist the infantry in stopping an attack.
3. To assist the infantry in ejecting the enemy from the position, should he have local successes.

The following defensive fires are planned:

1. Long-range fires, in support of covering forces, other than the outpost and, to cover their withdrawal.
2. Long-range fires in support of the outpost, and to cover its withdrawal.
3. *Counterpreparation fires.*—*a.* Definite plans or programs of fires, as complete as the time and information of the enemy permit, are made to meet the enemy dispositions. These plans are based upon intelligence from all agencies and from a study of the plans open to the enemy. For each plan open to the enemy, a plan of fires is prepared to meet

that enemy capability. These capabilities range from local attacks on any part of the front to a general attack along the entire front. In the former case, they are termed: "local counterpreparations". In the latter: "general counterpreparations". Local counterpreparations are fired on call of the supported infantry unit commander in whose sector



1. Areas not covered by flanking machine gun fire.
2. To block the most dangerous probable avenues of approach of hostile infantry and tanks.
3. In dead spaces of the infantry small arms fire.
4. Lightly wooded or open areas.
5. To thicken the infantry fire on weak sections of the position.

NOTE:—

Some dead spaces may exist for the artillery fire and these should be covered by the fire of the infantry mortars. Also dense woods are suitable areas for mortar fire where the comparatively flat trajectory fire of the light artillery would be less effective. Therefore the infantry battalion commander should select the locations for the standing barrages (normal and emergency) prior to selecting the locations for the defensive concentrations of the 81-mm mortar.

The numbers on the map correspond to the numbers above.

FIGURE 49.—Suitable locations for artillery barrages.

the fires are to be placed. Usually the general counterpreparation is fired on order of the division commander only.

b. The purpose of a counterpreparation is to defeat the enemy attack before it is launched by breaking up the enemy's attack formations, preventing or interfering with his artillery preparation, interdicting his movements, disorganizing his command, observation, and signal communication systems, and impairing his morale.

c. Except for enemy artillery positions at greater range, a zone to the depth of 1,500 to 2,000 yards in rear of the enemy's forward elements usually will include the important targets for counterpreparation fires of the light artillery.

4. *Barrages.*—Barrages are fired by the light artillery to bar the advance of the enemy into the battle position. They are used, primarily, for close defense of the main line of resistance.

The infantry battalion commander coordinates his organic battalion fires and the fires of all supporting weapons. For the supporting artillery he selects the locations of all artillery barrages, normal and emergency, which may have been allotted to his battalion sector by the infantry regimental commander or higher authority. Areas which cannot be swept by flanking machine-gun fire may be designated as the locations of artillery barrages and also for the locations of the normal defensive concentrations of the 81-mm mortars. In the coordination of these close-in defensive fires, the characteristics of the weapons are considered, and assignment of barrage locations are made in accordance with these characteristics. Accordingly, the assignment gives preference to the high-angle mortar fire in dense woods and in dead spaces, where the comparatively flat trajectory fire of light artillery would be less effective.

a. Each battery of light artillery usually is assigned one normal barrage. The normal barrage is the first priority mission of the battery to which it is assigned. It is fired on signal from the infantry company or battalion, direct

to the firing battery, usually by using a rocket or other visual means.

b. Each battery of light artillery may be assigned one or more emergency barrages. An emergency barrage is one placed in the sector of an infantry unit which is supported by another artillery battalion. It is used to supplement the other battalion's normal barrages, covering with fire those areas which cannot be covered by the other battalion. An emergency barrage will usually be fired on the order of the artillery battalion commander, or other higher artillery commander.

5. *Concentrations.*—In addition to barrages in front of the main line of resistance, artillery concentrations are prepared so as to thicken and add depth to the fires of the infantry weapons.

6. *Fires to limit enemy penetration.*—A plan of fires is prepared by the artillery commander so as to cover localities within the battle position which may be captured by the enemy. These are also concentrations and are coordinated with the plan of the infantry battalion commander. If the enemy should force a salient into the battle position, the infantry battalion commander may designate certain of the concentrations (one per battery) as new normal barrages.

7. *Fires to support counterattacks and counteroffensives.*—Fires are prepared to support a counterattack or a counteroffensive.

8. *Fires to cover the withdrawal of the force.*—When a withdrawal is contemplated, or indicated, the artillery commander should perfect his plan well in advance. He selects position areas for his units and prepares a tentative plan of fires to impede the advance of the enemy, should a withdrawal become necessary.

BATTERY POSITIONS

The following considerations serve as a general guide for the selection of battery positions:

1. Each battery must be emplaced so as to enable it to execute its assigned missions.

2. The artillery must be able to mass its fires as indicated in the general mission assigned by the division commander.

3. Some batteries may be required to participate in the covering force action. Hence they may have to be emplaced temporarily in front of the main line of resistance.

4. Some batteries should be placed well forward, generally just in rear of the regimental reserve line, in order to execute harassing and interdiction fires deep into the enemy area. Batteries so emplaced will be able to support and to cover the withdrawal of the forces on the outpost line.

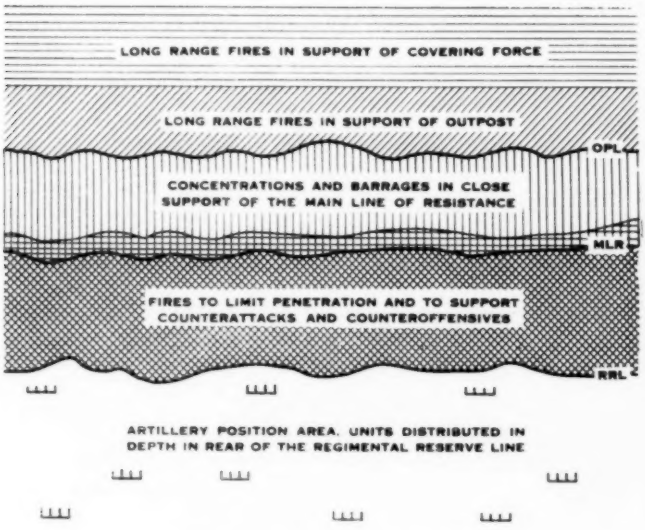

LONG RANGE FIRES IN SUPPORT OF COVERING FORCE
LONG RANGE FIRES IN SUPPORT OF OUTPOST
OPL
CONCENTRATIONS AND BARRAGES IN CLOSE SUPPORT OF THE MAIN LINE OF RESISTANCE
MLR
FIRES TO LIMIT PENETRATION AND TO SUPPORT COUNTERATTACKS AND COUNTEROFFENSIVES
RRL
ARTILLERY POSITION AREA, UNITS DISTRIBUTED IN DEPTH IN REAR OF THE REGIMENTAL RESERVE LINE

FIGURE 50.—Artillery fires in defense.

5. *All batteries* should be able to participate in the counterpreparation, and in other fires in support of the main line of resistance.

6. From one-half to two-thirds of the light batteries should be able to fire in close support of the regimental reserve line and throughout the battle position.

Since some of these characteristics conflict, a compromise usually is necessary. In general, division artillery should be distributed in depth behind the battle position, echeloned by battalion, and echeloned by battery within the battalion. Considerable echelonment of the batteries is not desirable, as it increases the difficulty of control, communication, and fire direction. However, extensive distribution of the batteries of a battalion, in depth and in width, cannot be avoided unless additional light artillery is attached to the division for direct support missions.

The position areas of the medium batteries, in general support, may overlap those of the light batteries. Positions suitable for howitzers and unsuitable for guns usually are found in areas assigned to the light batteries; hence, light artillery batteries are given priority in areas common to both.

In most situations, suitable positions can be found in the zone extending from the regimental reserve line to a line about 4,500 yards in rear of the main line of resistance. To emplace artillery farther to the rear is to sacrifice range and effective support.

ARTILLERY WITH SECURITY DETACHMENTS

The composition of the security detachment depends on the mission, the strength of the detachment, the terrain, and the lines of action open to the enemy. Detachments of less than a battalion of infantry rarely have artillery attached. Those of a battalion or greater very often have light artillery attached, particularly when they may be required to operate out of supporting range of the artillery with the main body.

On the march, or in position, the artillery is disposed so as to be protected by the infantry. In addition, the artillery takes such measures as may be necessary to provide for its own protection. Light artillery is particularly suited to employment with security detachments. Whenever possible, complete tactical units of artillery are used with security detachments. If a unit less than a battalion, such as a battery is so employed, sufficient personnel from

battalion headquarters should be attached to enable the battery to carry out the functions of liaison, communication with the airplanes working with the detachment, and signal communication.

Security detachments usually are the first elements of a command to gain contact with an enemy, or the last to maintain contact. Owing to this fact, skillful handling of the artillery is necessary, to ensure bringing fire on the enemy at the earliest possible moment, and to maintain continuity of support during the maneuver of the security detachment. To permit the foregoing, it is essential that the need for the use of the artillery be anticipated and that, by proper reconnaissance and other preparations, entry into action be expedited.

HELP YOUR ARTILLERY BY CAPTURING THE BEST OBSERVATION OF THE ENEMY AREA AVAILABLE. IT WILL IMPROVE YOUR SUPPORT AND CONSERVE AMMUNITION FOR OTHER TARGETS.

The proximity of good observation has great influence on the selection of positions for the artillery of security detachments. This is true especially in the case of advance guards, flank guards, and rear guards, where quick action is required. Such observation enables the artillery commander to keep in close touch with the situation, and to bring fire rapidly on principal enemy threats. Ground observation is supplemented by observation aviation, whose use with security detachments is habitual. It must be remembered that the situation, during the early stages of any engagement in which a security detachment takes part, is characterized by uncertainty as to possible enemy actions. As the forces engaged are relatively small, the situation changes rapidly. It is for these reasons that good observation, both ground and aerial, is of such prime importance. Good observation enables commanders to view the enemy's movements and dispositions, and to plan and

execute the tactical missions necessary to counter his possible lines of action.

ARTILLERY WITH ADVANCE GUARDS

The size of the advance guard and the nature of its mission determine whether or not artillery is to be attached and the amount of artillery which should be attached.

Except for occasions when a very strong advance guard of approximately the size of an infantry regiment is required, it seldom is necessary to attach artillery to an advance guard. Instead it is preferable to support the action of small advance guards such as an infantry battalion or smaller unit, by artillery with the main body.

When contact is not imminent and when artillery is attached to a large advance guard, it is placed in the column so as to facilitate its deployment and entry into action, while ensuring it adequate protection. Under these conditions, it marches at the tail of the reserve, while its commander marches with the advance guard commander, wherever he may be. To maintain continuous reconnaissance during the march, and to insure liaison immediately on contact, a reconnaissance party from the artillery usually marches well forward in the column, and a liaison officer is with the support commander.

When contact is not imminent, and when artillery with the main body is to furnish the artillery support for the advance guard, *the artillery commander should be directed to be prepared* to support the advance guard when contact becomes imminent. For this purpose the artillery commander sends an artillery reconnaissance party to move between the advance party and the reserve so as to execute continuous reconnaissance for observation, gun positions, and routes thereto. He also establishes command liaison with the commander of the advance guard, either by personal contact or through a staff representative. Thus, he is able to dispose his battalion promptly to support the advance guard when contact becomes imminent.

As soon as contact becomes imminent the advance guard

infantry adopts a formation ready for immediate combat. Therefore, either the attached artillery or the artillery with the main body must be prepared and disposed in the march column so as to be able to furnish prompt supporting fires. This, combined with the necessity of steadily advancing the artillery, requires that it move by echelon, by bounds from one position to another. While one echelon is moving the other is in position ready to fire or actually firing. After the moving echelon has occupied a new position and is ready to fire, the rear echelon leap-frogs past it to the next position. Thus the infantry is furnished continuous support by some artillery during the entire advance. Such a procedure requires that fire direction and communication

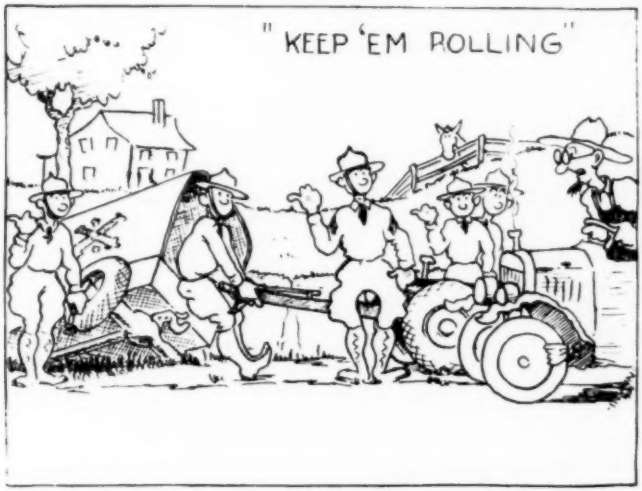


FIGURE 51.

be decentralized in large measure to battery commanders. When the infantry of advance guard cannot overcome the hostile resistance promptly, and when the commander of the main body decides to organize a coordinated attack, the artillery is reassembled and centralized control is re-established, through the battalion fire direction center and normal artillery communication agencies.

REITERATION

THE SUPPORTED INFANTRY AND ITS DIRECT SUPPORT ARTILLERY SHOULD UNDERSTAND:

1. THE FACTORS OF SAFETY.

2. THE METHODS OF DESIGNATING TARGETS.

3. THE METHOD OF CO-ORDINATING THE INFANTRY AND THE ARTILLERY PLANS OF FIRE.

4. THE LIAISON CONTACTS TO BE EXPECTED.

5. THE GENERAL CHARACTERISTICS OF THE DIVISIONAL ARTILLERY.

6. THE MISSION OF THE ARTILLERY TO SUPPORT THE INFANTRY.

CHAPTER 9

Loads of Infantry Motor Vehicles

(AN INFANTRY SCHOOL STUDY)

On October 30, 1939 the War Department issued a supplement to Tables of Basic Allowances No. 7 for Infantry units. The allowances and types of transportation listed in that supplement were prescribed for *peace strength* units (rifle) in triangular divisions. The supplement stated that infantry regiments (rifle) not assigned to triangular divisions will retain their present transportation (and hand carts) pending future issue of motor transportation.

The Infantry School has made a study of the practicable loadings of all the 164 motor vehicles of the infantry regiment (rifle). Each of these vehicles must be driven by a chauffeur or motorcyclist and carries certain personnel and equipment. The following pages show what personnel can be transported by the organic vehicles, what men are provided with no transportation and what equipment the vehicles of each unit can carry.

Tables of Basic Allowances No. 7, Infantry, dated January 1, 1939, as amended by the Supplement, change the allowances of motor vehicles as prescribed by the current Tables of Organization. The adoption of trucks, ½-ton, 4x4, pickup as prime movers and as weapon and ammunition carriers necessitates certain changes in the loads that can be carried by the unit vehicles. The number of trucks composing the ammunition section of the battalions was reduced from three to two. No specific instructions have been issued as to how the authorized loads will be placed

Type of Transportation	REGT HQ AND HQ CO.				SERVICE CO.								BN HQ AND HQ DET				HEAVY WEAPONS COMPANY							RIFLE CO.		MED DET			Aggregate for Regiment
							Transportation Platoon																						
	Regtl Comdr, Staff and Co Hq	Antitank Plat	Com Plat	TOTAL COMPANY	Co Hq	Regtl Hq Plat (Supply Sec)	Plat Hq	Bn Sec	Hq Co Sec	Maint Sec	TOTAL COMPANY (Includes 3 Bn Secs)		Bn Comdr and Staff	Msg Cen Sec	TOTAL One Det	TOTAL Three Dets	Co Hq	81-mm Mortar Plat	.50 Cal MG Plat	.30 Cal MG Plat	TOTAL Two .30 Cal MG Platoons	TOTAL Company	TOTAL 3 Cos	One Rifle Co	Nine Rifle Cos	Hq Sec	One Bn Sec	TOTAL Det (Includes 3 Bn Secs)	
Car, light, 5-passenger, sedan	1			1																									1
Motorcycle with side car			4	4	1	1		1		1	6			2	2	6	2					2	6						22
Truck, ½-ton, 4x4, command	5	1	1	7	1		1				2		1		1	3	1	1	1	1	2	5	15			2		2	29
Truck, ½-ton, 4x4, pickup		9	10	19						3	3							2	2	4	8	12	36	1	9	2	2	8	75
Truck, 1½-ton (LC) (2dt), 4x4, cargo					1			6	1	2	22															1		1	23
Trailer, ¾-ton, 2-wheel					1			4	1		14																		14
TOTALS				31							47					9							57		9			11	164

FIGURE 52.—Allotment of Transportation, Infantry Regiment (Rifle) (Peace) Triangular Division.

on the trucks, 1½-ton, (LC) (2dt), 4x4, Cargo and the ¾-ton trailers, composing the regimental kitchen train.

In the absence of instructions from the War Department the following loadings illustrate one solution to the problem based on the equipment, the personnel and the vehicles as prescribed at the present time (June 1, 1940). These loadings have not been approved by the War Department; but they represent the thought of the Infantry School on the subject.

Figure 52 shows the total number and type of motor vehicles assigned to an infantry regiment, rifle.

NOTES

The terms Company Trains, Combat Trains and Field Trains have been discontinued. In the future all vehicles assigned to a regiment will be known as the Regimental Train. These vehicles are subdivided according to their assigned function into:

Ammunition Train.
Kitchen Train.
Medical Train.

All vehicles assigned to a company are known as Company Transport.

There is no transportation authorized for the regimental or battalion command post equipment. Maneuvers and field exercises have indicated that both regimental and battalion command posts must have certain items of equipment if these headquarters are to function efficiently even if such items are not prescribed by the Tables of Basic Allowances. Items such as additional gasoline (electric) lanterns, black tents, folding tables and chairs, gelatin pads, and similar articles are needed. These items should move with the command post.

There is no transportation for the equipment and personnel of the regimental supply office or for the rear echelon of regimental headquarters. However, these elements function well in rear of the front lines and usually can be moved forward by shuttling.

Tables of Basic Allowances do not provide any gasoline containers for the individual motor vehicles. Maneuvers have shown the necessity for one 10-gallon container for every vehicle, excluding motorcycles.

Food containers, such as marmite cans, are not authorized but are an essential item of equipment. About six should be provided for each company.

There are no spare vehicles for the infantry regiment. Enemy action, accidents and mechanical failures will most certainly result in the loss of some vehicles, and such losses could cripple seriously some of the subordinate units.

Each truck should carry all the individual equipment of the men normally assigned to the truck. The packs of these men may be carried on wire stretched across the front bow. Two packs can be fastened together by interlocking their straps, then hung over the wire. By fastening the front truck curtain to the bottom of the truck, a canvas cover protection for the packs is always on hand.

The addition of extra vehicles makes it essential for all units to have an extra number of trained drivers. These men should be trained to perform their normal duties as well as being qualified to serve as truck drivers. Normal losses due to kitchen police, detached service, hospital, etc., make it undesirable to have men serve only as chauffeurs. In addition all NCO's should be qualified as drivers.

The packs of men assigned to motorcycles should be carried on the company trailer.

REGIMENTAL HEADQUARTERS AND HEADQUARTERS COMPANY

Regimental Commander and Staff

Car, light, 5-pass, Sedan

1 Col (Regtl Comdr)
1 Major or Capt (S-3)
1 Radio Operator SCR-195
1 Pvt (Chauffeur)

Truck, ½-ton, 4 x 4, comd

1 Major (S-4)
1 Mr Sgt (Supply) (2)
1 Staff Sgt (Supply) (2)
1 Pvt (Chauffeur)

Truck, ½-ton, 4 x 4, comd

1 Lt Col (Ex O)
1 Capt (S-1)
1 Mr Sgt (Sgt Maj) (1)
1 Pvt (Chauffeur)
(See Figure 53.)

Truck, ½-ton, 4 x 4, comd

1 Capt or Lt (S-2) (3)
1 Staff Sgt (Int Plat Ldr)
1 Sgt (Draftsman Top)
1 Pvt (Chauffeur) (4)

Company Headquarters

Truck, ½-ton, 4 x 4, comd

1 Capt (CO Hq Co)
1 1st Sgt
1 Sgt (Transport)
1 Sgt (Supply)
1 Pvt (Chauffeur)

Truck, ½-ton, 4 x 4, comd

1 Sgt (Clerk Hq) (1)
1 Corp (Clerk Hq) (1)
2 Pvts (Clerk Hq) (1)
1 Pvt (Chauffeur) (4)

NOTES

(1) From the Staff Section, Regimental Headquarters Platoon, Service Company.

(2) From the Supply Section, Regimental Headquarters Platoon, Service Company.

(3) Peace strength tables combine the duties of S-3 and S-2. During maneuvers an S-2 should be available and should ride in the truck as shown.

(4) Tables of Organization 7-12 effective January 1, 1939 do not provide chauffeurs for these vehicles. Drivers should be furnished by Headquarters Company. Part of its personnel must be trained as drivers in addition to their normal duties.

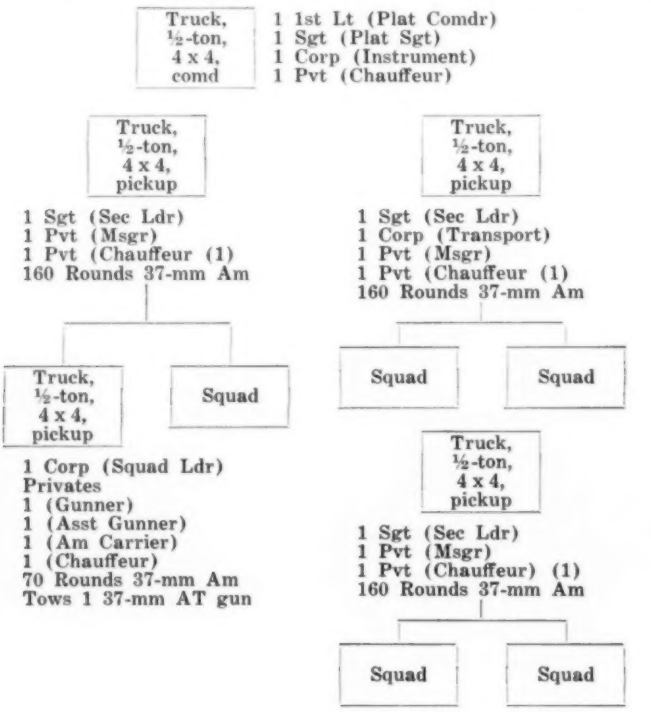
No provision has been made for transporting the rear echelon of regimental headquarters, or any command post equipment. During maneuvers it is necessary to secure extra transportation to carry the command post equipment, consisting of two black pyramidal (experimental) tents, 3 folding tables, 6 folding chairs, 3 gasoline lanterns, gelatin copying pad and similar articles. These items are not prescribed by Tables of Basic Allowances but are essential for the conduct of maneuvers and operations.

ANTITANK PLATOON

(Regimental Headquarters Company)

Motor Transportation

Truck, ½-ton, 4 x 4, command 1
Truck, ½-ton, 4 x 4, pickup 9



NOTES

(1) The chauffeurs for the three section headquarters trucks are not provided in T/O 7-12, effective January 1, 1939. Drivers for these vehicles should be secured from the antitank platoon, usually the section messengers; some men should receive training as drivers in addition to their normal duties.

Each of the six squad trucks carry the same equipment.

Weight of load on each squad truck:

70 rounds ammunition @ 3.41	=	239 pounds
3 men @ 150	=	450 pounds
5 sets individual equipment	=	250 pounds
TOTAL	=	939 pounds

The ammunition carried by each truck consists of 90% armor piercing and 10% high explosive.

Men should carry their packs and individual equipment on their assigned trucks at all times.

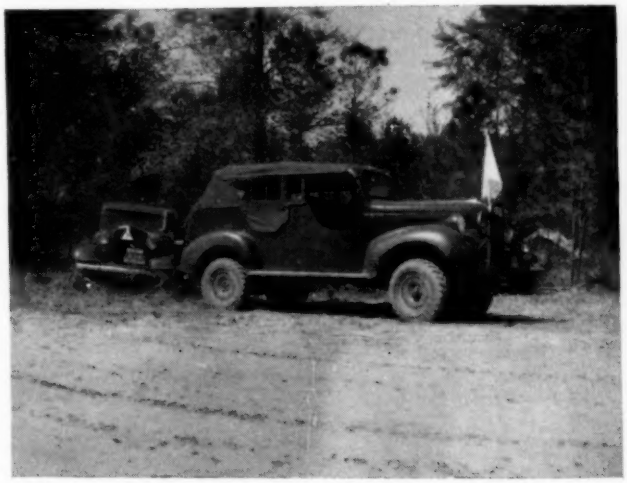


FIGURE 53.—Truck, ½-ton, 4 x 4, command.
(For assignment of command trucks to elements of infantry regiment see Figure 52.)

COMMUNICATION PLATOON—REGIMENTAL SECTION

(Regimental Headquarters Company)

Message center personnel of the Regimental Section carry the following signal equipment:

1 Cipher Device, M-94
1 Code, Air-Ground, Liaison
1 Code, Division Field

Truck, ½-ton, 4 x 4, comd

1 Capt or 1st Lt (Plat Comdr)
1 Mr Sgt (Com Chief)
1 Tech Sgt (Sec Chief, Msg Cen)
1 Tech Sgt (Chief Rad & Vis Sec)

Motorcycle with Sidecar

1 Pvt (Msg Cen clerk)
1 Pvt (Motorcyclist)

No. 1—Radio Truck

Truck, ½-ton, 4 x 4, pickup

1 Sgt (Rad Opr)
1 Pvt (Rad Opr)
1 Pvt (Chauffeur) (1)
Equipment
(See Figures 54 & 55)

No. 2—Wire Truck

Truck, ½-ton, 4 x 4, pickup

1 Corp (Lineman)
1 Pvt (Lineman)
1 Pvt (Chauffeur)
Equipment
(See Figures 56 & 57)

No. 3—Wire Truck

Truck, ½-ton, 4 x 4, pickup

2 Pvts (Linemen)
1 Pvt (Chauffeur)
Equipment
(See Figure 58)

No. 4—Radio Truck

Truck, ½-ton, 4 x 4, pickup

2 Pvts (Rad Oprs)
1 Pvt (Chauffeur) (1)
Equipment
(See Figures 59 & 60)

NOTES

(1) The chauffeurs for these vehicles are not provided in T/O 7-12 effective January 1, 1939. Drivers for all vehicles should have dual functions both as drivers and as members of the communication section.

The Panel Set, AP-30-B and the Projector, Signal, Ground (w/25 signals, ground assorted) are normally packed on Truck No. 1.

Based on T/O 7-12, effective January 1, 1939 and the equipment authorized by Tables of Basic Allowances dated January 1, 1939 as amended up to June 1, 1940 we find—

Peace strength of Communication Platoon—1 officer and 34 men.

1 officer and 18 men carried in organic transportation.

16 men are not provided with organic transportation.

Packs and individual equipment should be carried on the trucks to which the men are assigned. Rolls should be carried in the company trailer.

As soon as the initial command post is established, an advance echelon should always be organized. Trucks, personnel and equipment should be prepared in order to establish a new command post. These could be No. 1—wire truck and No. 4—radio truck.

One radio set SCR-195, with its operator, usually is carried in the commanding officers car.

FIGURE 54.—Truck No. 1—Regimental Communication Section.

Weight of communication equipment	1080 lbs.
Weight of individual equipment (3 men)	150 lbs.
Weight of one man on body of truck	150 lbs.
Total weight	1380 lbs.

Personnel carried on vehicle:
- 1 Sergeant (Radio operator)
- 1 Private (Radio operator)
- 1 Private (Chauffeur)

The chauffeur and the sergeant radio operator ride on the seat. The private radio operator and the individual equipment of all three men will be carried in the body of the truck.

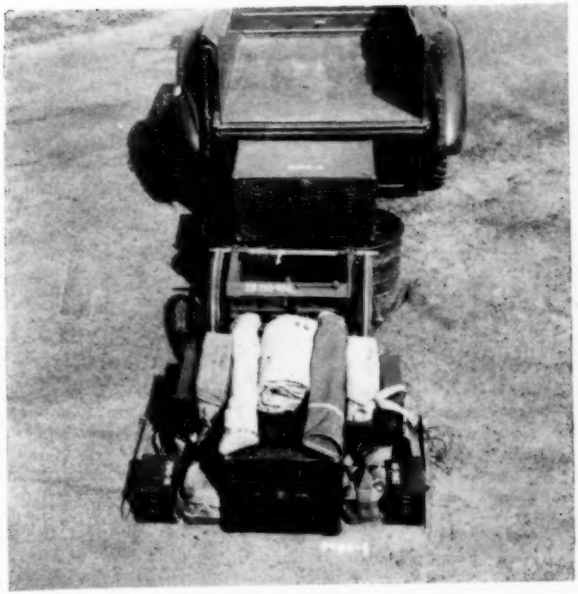


FIGURE 55.—Equipment carried in Truck No. 1 of Regimental Communication Section.

Equipment

- 2 Radio Sets, SCR-131
- 2 Antenna bags for SCR-131
- 2 Generators for SCR-131
- 2 Spare parts bags for SCR-131
- 1 Radio Set, SCR-171 (not shown in picture)
- 2 buzzerphones, EE-1A (Tables of Basic allowances prescribe Telegraph Set, TG-5)
- 2 Reels, DR-5 (one mile of wire each)
- 1 Reel cart, RL-16
- 2 Pack chests, BC-5
  - 4 Telephones, EE-8, 4 or 5
  - 2 Coils, C-161
  - 1 Switchboard, BD-11
  - 4 Terminal Strips, TM-184
  - 1 Voltammeter

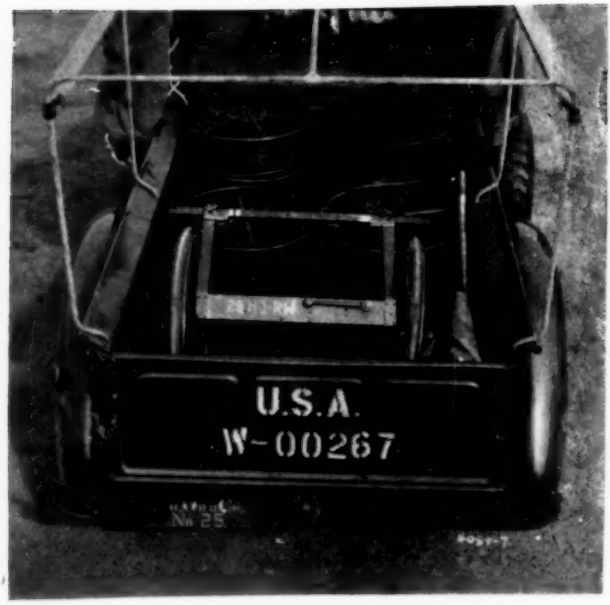


FIGURE 56.—Truck No. 2—Regimental Communication Section.

Weight of communication equipment	960 lbs.
Weight of individual equipment (3 men)	150 lbs.
Weight of one man on body of truck	150 lbs.
Total weight	1260 lbs.

One man and the individual equipment for all three men will be carried on the body of the truck.

Personnel carried on truck:
1 Corporal (Lineman)
1 Private (Lineman)
1 Private (Chauffeur)

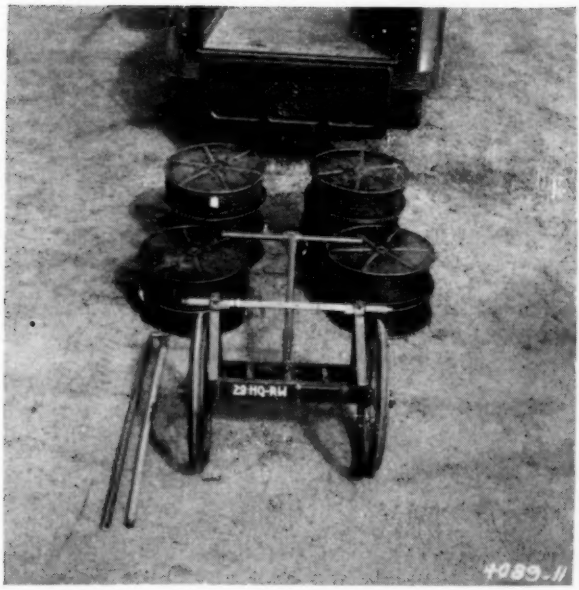


FIGURE 57.—Equipment carried on Truck No. 2 of Regimental Communication Section.

Load includes — 1 each reel cart, RL-16
10 each reels, DR-4
1 each Wire, pike, MC-123 (2 sections)

Each reel, wire DR-4 carries approximately ½ mile of wire.

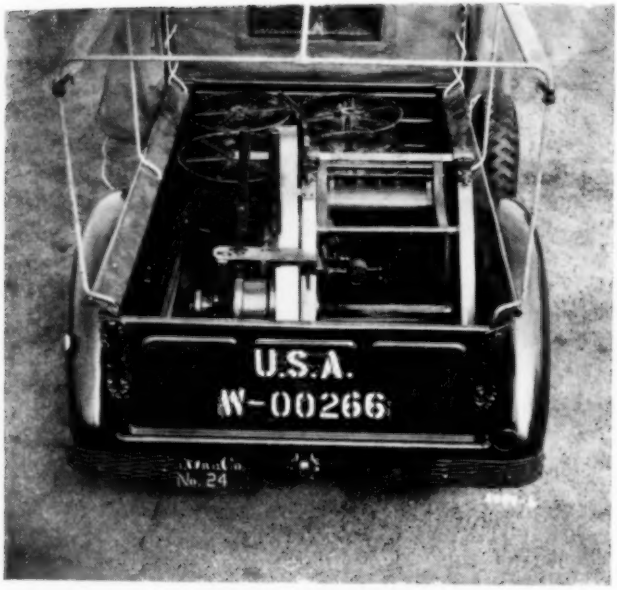


FIGURE 58.—Truck No. 3—Regimental Communication Section.

Weight of communication equipment	1020 lbs.
(This load normally not removed from truck)	
Weight of individual equipment (3 men)	150 lbs.
Weight of one man on body of truck	150 lbs.
Total weight	1320 lbs.

Load includes — 1 each power reel, RL-26
4 each reels, DR-5
1 Wire, pike, MC-123 (2 sections)

The four reels carry approximately four miles of wire.

Personnel carried on truck:
Privates.
2 Linemen.
1 Chauffeur.

One man and the individual equipment for all three men will be carried on body of truck.

FIGURE 59.—Truck No. 4—Regimental Communication Section.

Weight of communication equipment	960 lbs.
Weight of individual equipment (3 men)	150 lbs.
Weight of one man on body of truck	150 lbs.
Total weight	1260 lbs.

Personnel carried on vehicle:
2 Privates (Radio Operators)
1 Private (Chauffeur)

One man and the individual equipment for all three men will be carried on the body of the truck.

FIGURE 60.—Equipment carried on Truck No. 4 of Regimental Communication Section.

Equipment
- 1 Radio Set, SCR-171 (not shown in load)
- 2 Pack chests for two voice radios, SCR-195
  (Normally left on vehicle)
- 1 Panel set, AP-30-B

- 2 Pack chests, BC-5
  - 2 Axles, RL-27-A
  - 1 Cipher Device, M-94
  - 3 Codes, Air-Ground, Liaison
  - 2 Coils, C-161
  - 1 Radio Set, SCR-131
  - 1 Switchboard, BD-11
  - 2 Telegraph Sets, TG-5
    (Buzzerphone, EE-1A)
  - 4 Terminal Strips, TM-184-A
  - 1 Tool Equipment, TE-41
  - 3 Codes, Division Field

- 1 Lineman's Equipment

Voice radios, SCR-195 are not part of these loads if they are packed by the operators.

Frequency meter is not part of these loads as it is in the Communication Officer's vehicle.

1st BATTALION SECTION

(Communication Platoon, Regimental Headquarters Company.)

The Message Center Section of the Battalion Headquarters Detachment carries the following:

2 Cipher devices, M-94.
2 Codes, Air-Ground, Liaison.
2 Codes, Division Field.
1 Code, Fire Control.

Motor-cycle with sidecar	1 Tech Sgt (Sec Ldr) 1 Pvt (Motorcyclist)

The Panel Set, AP-30-B and the Projector, Signal Ground (w/25 signals, ground, assorted) are normally packed in Truck No. 2.

Truck No. 1

Truck, ½-ton, 4 x 4, pickup

Wire section
1 Staff Sgt (Sec Ldr)
2 Pvts (Linemen)
1 Pvt (Chauffeur)
Wire Equipment
(See Figures 61 and 62)

Truck No. 2

Truck, ½-ton, 4 x 4, pickup

Radio section
1 Staff Sgt (Radio Chief)
2 Pvts (Rad Oprs)
1 Pvt (Lineman)
1 Pvt (Chauffeur) (1)
Wire and Radio Equipment
(See Figures 63 and 64)

(1) The chauffeur for this vehicle is not provided in T/O 7-12. The driver should be a member of the Communications Section. The operator of the SCR-131 radio can drive in addition to his normal functions.

Based on T/O 7-12, effective January 1, 1939.
Peace strength 12 men.
11 men carried in organic transportation.
1 man (operator SCR-195) rides with the Bn CO in his command truck during tactical movements, otherwise on truck No. 2.

Packs and individual equipment should be carried on the trucks to which the men are assigned.

SAME For 2d and 3d BATTALIONS.

FIGURE 61.—Truck No. 1—Battalion Communication Section.

Weight of communication equipment	710	lbs.
Weight of individual equipment (3 men)	150	lbs.
Weight of one man on body of truck	150	lbs.
Total weight	1010	lbs.

Personnel carried on vehicle:
1 Staff Sergeant (Section Leader)
1 Private (Lineman)
1 Private (Chauffeur)

One man and the individual equipment for all three men are carried on the body of the truck.

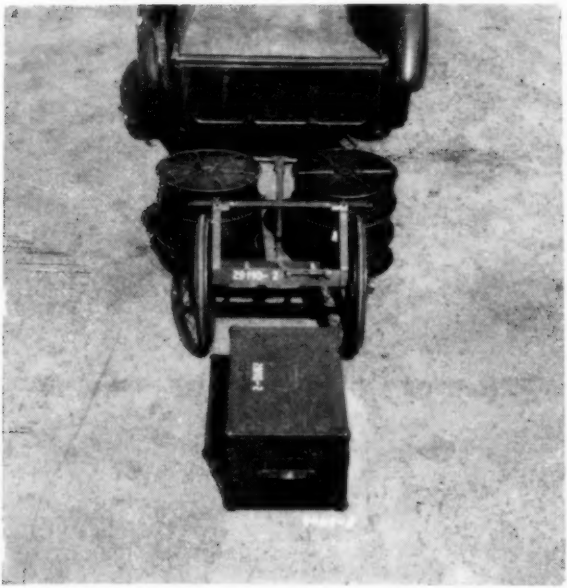


FIGURE 62.—Equipment carried on Truck No. 1 of Battalion Communication Section.

Equipment
- 1 Reel cart, RL-16
- 6 Reels, wire, DR-4
  (each holds approximately ½ mile of wire)
- 1 Chest, BC-5
  - 1 Axle, RL-27-A
  - 2 Codes, Air-Ground, Liaison
  - 1 Code, Fire Control
  - 1 Lineman's Equipment, TE-21
  - 2 Telephones, EE-8, 4 or 5

FIGURE 63.—Truck No. 2—Battalion Communication Section.

Weight of communication equipment	610 lbs.
Weight of individual equipment (3 men)	150 lbs.
Weight of one man on body of truck	150 lbs.
Total weight	910 lbs.

Personnel carried on truck:
2 Privates (Radio Operators)
1 Private (Chauffeur)

One man and the individual equipment for all three men is carried on the body of the truck.

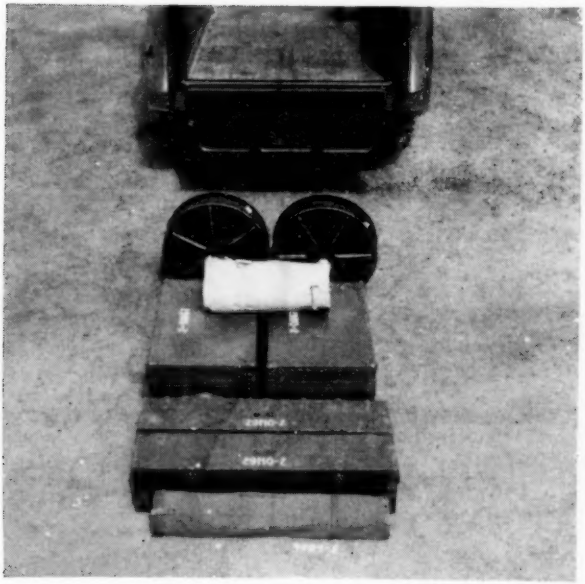


FIGURE 64.—Equipment carried on Truck No. 2 of Battalion Communication Section.

Equipment
- 2 Reels, wire DR-4 (approximately ½ mile wire each)
- 2 Radio Sets, SCR-195
- 2 Chests, BC-5
  - 1 Coil, C-161
  - 1 Radio Set, SCR-131
  - 1 Switchboard, BD-9
  - 1 Telegraph Set, TG-5 (Buzzerphone EE-1A)
  - 2 Telephones, EE-8, 4 or 5
  - 2 Terminal Strips
  - 1 Voltammeter
- 1 Panel Set, AP-30-B
- 1 Projector, Signal, Ground (w/25 signals, ground, assorted)

HEADQUARTERS AND HEADQUARTERS DETACHMENT
BATTALION, RIFLE
1st BATTALION

Truck, ½-ton, 4 x 4, comd	1 Lt Col (Bn Comdr) 1 1st Lt (Adj, S-2 & Det Comdr) 1 Tech Sgt (Bn Sgt Maj) 1 Pvt (Chauffeur)

Motorcycle with Sidecar	Motorcycle with Sidecar
1 Corp (Clerk, Record, Msg Cen Sec) 1 Pvt (Motorcyclist)	1 Corp (Int Sec) 1 Pvt (Motorcyclist)

Based on T/O 7-15 effective March 1, 1940.
Peace strength 2 officers and 11 men.
2 officers and 5 men are carried in organic transportation.
6 men are provided with no organic transportation.

SAME For 2d and 3d BATTALIONS.

No transportation is provided for the command post equipment, and other items authorized by Tables of Basic Allowances or for the equipment of the men who do not ride on organic transportation.

When the Radio Set, SCR-195 is needed at battalion headquarters, the set and its operator are carried in the command truck.

Individual equipment is carried on the vehicles to which the men are assigned. Packs are carried on one of the company vehicles.

INFANTRY COMPANY, RIFLE

Truck, ½-ton, 4 x 4, pickup	1 Supply Sergeant 1 Private (Chauffeur)

The following equipment is carried on the Company Weapon and Ammunition Carrier.

	Weight (pounds)
3 60-mm mortars, mounts, spare parts, equipment and accessories ..... (Including one 60-mm mortar for defense only; to be issued on mobilization.)	120
4 Light machine guns, tripods, spare parts, equipment and accessories (1) ..... (Including two light machine guns for defense only and to be issued on mobilization.)	204
Ammunition	
120 Rounds 60-mm mortar ..... (60 rounds per active mortar)	420
12 Chests LMG ..... (600 rounds per LMG)	204
	948

(1) Substitute: Browning Automatic Rifle, M1918 A2. For the BAR 240 rounds are carried on the individual—80 rounds by the LM Gnr, 80 by the Asst LM Gnr and 80 by the Ammunition Carrier. 900 rounds are carried on the company weapon and ammunition carrier.

Companies B, C, E, F, G, I, K, and L same as Company A.

INFANTRY BATTALION, RIFLE

1st BATTALION

AMMUNITION TRAIN

Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo	Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo
1 Pvt (Chauffeur)	1 Pvt (Chauffeur)
1 Pvt (Asst Chauffeur)	1 Pvt (Asst Chauffeur)
243 Bandoleers (96 Rounds) Cal .30 Am for rifles	243 Bandoleers (96 Rounds) Cal .30 Am for rifles
6000 Rounds Cal .30 Am for Light Machine Guns	6000 Rounds Cal .30 Am for Light Machine Guns
707 Rounds Cal .45 Am	707 Rounds Cal .45 Am
180 Rounds 60-mm Mortar Am	180 Rounds 60-mm Mortar Am

SAME FOR 2d and 3d BATTALIONS

HEAVY WEAPONS COMPANY

COMPANY HEADQUARTERS

Truck, ½-ton, 4 x 4, comd
1 Capt (Co Comdr)
1 1st Sgt
1 Sgt (Rcn and Sig)
1 Pvt (Chauffeur)

Motorcycle with Sidecar	Motorcycle with Sidecar
1 Pvt (Motor Mechanic)	1 Sgt (Transport)
1 Pvt (Motorcyclist)	1 Pvt (Motorcyclist)

Based on T/O 7-18, effective January 1, 1939.

Peace strength—1 officer and 16 men.

1 officer and 8 men carried in organic transportation.

8 men are provided with no organic transportation.

NOTES

When the infantry battalions march on foot, the extra men walk. On truck movements, the extra men are attached to squads or furnished extra transportation. In case the full allowance of ammunition is carried, the extra men cannot be transported on the squad trucks.

81-MM MORTAR PLATOON

Truck, ½-ton, 4 x 4, comd	1 1st or 2d Lt (Platoon Comdr) 2 Pvts (Asst Gunners) 1 Pvt (Chauffeur)

Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup
1 Corp (Squad Ldr)	1 Corp (Squad Ldr)
1 Pvt (Gunner)	1 Pvt (Gunner)
1 Pvt (Chauffeur) (1)	1 Pvt (Chauffeur) (1)
1 81-mm Mortar and Mount, Accessories, Spare Parts, and Equipment	1 81-mm Mortar and Mount, Accessories, Spare Parts, and Equipment
96 Rounds Am, 20% Heavy	96 Rounds Am, 20% Heavy

(1) Chauffeurs for these vehicles not authorized in the peace strength Tables of Organization 7-18. The additional drivers should be trained from the personnel of the mortar squads, usually some of the ammunition carriers.

Peace strength 1 officer and 17 men.
1 officer and 9 men carried in organic transportation.
8 men are provided with no organic transportation.

Weight of equipment (each truck)	
78 rounds light ammunition (in containers) (Weight of light shell 7.3, weight of container 1.8)	710
18 rounds heavy ammunition (in containers) (Weight of heavy shell HE M56 (recently adopted as standard) 10.66, weight of container 2.5 app)	239
Mortar, accessories and spare parts	143
Weight of gunner	150
Weight of individual equipment (3 men)	150
	1392 lbs

Packs and individual equipment are carried on the trucks with the men. Rolls are carried on the company trailer.

CALIBER .50 MACHINE GUN PLATOON

Truck, ½-ton, 4 x 4, comd	1 Lieutenant (Platoon Commander) 2 Privates (Assistant Gunners) 1 Private (Chauffeur)

Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup
1 Corporal (Squad Leader) 1 Private (Gunner) 1 Pvt (Chauffeur) 1 Cal .50 Machine Gun, tripod, accessories, spare parts and equipment. 1200 rounds Cal .50 Machine Gun ammunition.	Same load

Peace strength—1 officer and 18 men.
1 officer and 9 men carried in organic transportation
9 men are not provided with organic transportation.

Weight of load

1 Caliber .50 machine gun	125
1200 rounds ammunition packed in chests	432
Weight of gunner	150
Weight of individual equipment (3 men)	150
	857 lbs.

The packs and individual equipment are carried in the trucks. Rolls should be carried in the company trailer.

The caliber .50 machine gun should be carried mounted on its tripod.

When the authorized allowance of ammunition is carried all men cannot be carried on the organic vehicles.

CALIBER .30 MACHINE GUN PLATOON

Truck, ½-ton, 4 x 4, comd	Truck, ½-ton, 4 x 4, pickup
1 1st or 2d Lt (Platoon Comdr)	1 Corp (Squad Ldr)
1 Platoon Sergeant	1 Pvt (Gunner)
1 Corp (Agent & instrument)	1 Pvt (Chauffeur) (1)
1 Corp (Transport)	
1 Pvt (Chauffeur)	

ARTICLE	*Weight*
1 gun with water	92
27 ammunition chests (loaded)	554
1 gun w/o water (defense only) (no ammunition carried for this gun)	85
4 water chests (full)	92
1 spare parts chest	21
1 Gunner	150
3 Sets individual equipment	150
TOTAL	1144 lbs.

Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup
Same load.	Same load.	Same load.

Peace strength, 1 officer and 36 men.

1 officer and 16 men carried in organic transportation.

The following men are not provided with organic transportation:

The two section leaders (Sergeants)

In each squad

1 Private—Asst Gunner

3 Privates—Ammunition and Water Carriers.

(1) The squad chauffeurs are not authorized for the peace strength organization. Two ammunition carriers of each squad should be trained as drivers.

Packs of the men riding organic transportation are carried on the squad trucks. Rolls are carried on the company trailer.

In case all authorized equipment is carried on the squad trucks, it is not possible to carry extra personnel.

When the infantry battalion marches on foot, the extra men of the platoon walk.

For all tactical moves requiring antiaircraft protection, one gun in each squad truck should be mounted for antiaircraft fire.

INFANTRY COMPANY, SERVICE COMPANY HEADQUARTERS

Truck, ½-ton, 4 x 4, comd

1 Capt (CO Serv Co)
1 Capt (Pers Adj)
1 Sgt (Supply)
1 Pvt (Chauffeur)

Motorcycle with Sidecar

1 Pvt (Messenger) (1)
1 Pvt (Motorcyclist)

Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo

1 Sgt (Mess)
2 Pvts (Cooks)
1 Pvt (Chauffeur)
2 Units Field Range, M1937, kitchen equipment, food containers, water cans, one field ration, one tent fly, (large) and 1 extra burner for field range.

Trailer, ¾-ton, 2-wheel

Officers bedding rolls, individual rolls of men, company records, and Orgn property prescribed by TBA.

NOTES

(1) From Staff Section, Regimental Headquarters Platoon.

Peace strength organization 2 officers and 11 men.
Major S-4 rides with regimental headquarters.

1 officer and seven men ride.

Following men are not provided with organic transportation:

1 1st Sergeant.
1 Corp Co Clerk.
1 Pvt Armorer-Artificer.
1 Pvt Carpenter.

The enlisted men of the Service Company for whom no organic transportation is provided are usually on duty with the rear echelon of the regiment. Normally, they are moved by shuttling.

STAFF SECTION, REGIMENTAL HEADQUARTERS PLATOON

This section has no authorized transportation.

Peace strength 1 officer and 11 men; transported as follows:

1 Capt (Pers Adj))—Serv Co command truck.

1 Mr Sgt (Sgt Maj)
1 Sgt (Clerk Hq)
1 Corp (Clerk Hq)
2 Pvts (Clerk Hq)
} Ride with regimental headquarters & headquarters company.

1 Pvt (Messenger))—Motorcycle Hq Serv Co.

The following men are not provided with organic transportation:

1 Mr Sgt (Pers)
2 Staff Sgts (Color)
1 Staff Sgt (Stenog)

SUPPLY SECTION, REGIMENTAL HEADQUARTERS PLATOON

Motorcycle with Sidecar	1 Sgt (Ammunition) 1 Pvt (Motorcyclist)

Peace strength 7 enlisted men.

Personnel transported as follows:

1 Mr Sgt (Supply) ..... with S-4
1 Staff Sgt (Supply) ..... with S-4
1 Sgt (Am) ..... on organic motorcycle
1 Pvt (Motorcyclist) ..... on organic motorcycle

The following men are not provided with organic transportation:

1 Pvt (Clerk Hq)
1 Pvt (Clerk Record)
1 Pvt (Clerk Stock)

SERVICE COMPANY

TRANSPORTATION PLATOON

PLATOON HEADQUARTERS

Truck, ½-ton, 4 x 4, comd	1 Capt or 1st Lt (CO) 1 Mr Sgt (Transportation Chief & Mechanical Inspector) 1 Corp (Truck Master) 1 Pvt (Chauffeur)

All personnel are carried in organic transportation.

1st BATTALION SECTION TRANSPORTATION PLATOON

Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo

Trailer, ¾-ton, 2-wheel

Motor-cycle with Sidecar

1 Staff Sgt (Supply)
1 Pvt (Motorcyclist)

Co A (kitchen)
Same as Serv Co except add 1 cook and 1 unit, Field Range M1937.

4 Pvts (Chauffeurs) drive the four kitchen trucks.
2 Pvts (Chauffeurs) drive the two battalion ammunition trucks.
1 Pvt (Chauffeur) available for other duty.

Company B, C and D—Same as Company A.

2d BATTALION SECTION Same as 1st Battalion.

3d BATTALION SECTION Same as 1st Battalion.

HEADQUARTERS COMPANY SECTION

Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo	Same as Rifle Co
Trailer, ¾-ton, 2-wheel	Same as Serv Co

1 Pvt (Chauffeur) drives this truck.

MAINTENANCE SECTION

Truck, ½-ton, 4 x 4, pickup
1 Pvt (Mec 2d Cl)

Truck, ½-ton, 4 x 4, pickup
1 Pvt (Mec 3d Cl)

Truck, ½-ton, 4 x 4, pickup
1 Pvt (Mec 3d Cl)

Truck, 1½-ton (LC) 4 x 4, Cargo
1 Staff Sgt (Mec)
1 Pvt (Welder)
1 Pvt (Clerk, Record)
Equipped with wrecker

Truck, 1½-ton (LC) 4 x 4, Cargo
2 Pvts (Mec 4th)
Heavy Maintenance Tools

Motor-cycle with Sidecar
1 1st Lt (Maint O)
1 Pvt (Motorcyclist)

All men carried in organic transportation.

No chauffeurs are provided for these trucks. All men should be trained as drivers in addition to their normal duties.

REGIMENTAL MEDICAL DETACHMENT

DETACHMENT HEADQUARTERS

Truck, ½-ton, 4 x 4, comd	Truck, ½-ton, 4 x 4, comd
1 Maj MC (Regtl Surg)	1 Capt MC (Asst Regtl Surg)
1 Pvt (Chauffeur)	1 Staff Sgt
	1 Pvt (Sanitary Technician)
	1 Pvt (Chauffeur) (1)

All men are carried in organic transportation.

REGIMENTAL HEADQUARTERS SECTION

Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup
1 Capt MC	1 Capt DC
2 Pvts (Litter Bearers)	1 Pvt (Dental Technician)
1 Pvt (Medical Technician)	1 Pvt (Chauffeur) (1)
1 Pvt (Chauffeur)	

Truck, 1½-ton (LC) (2dt), 4 x 4, Cargo	1 Corp 1 Pvt (Surgical Technician) 1 Pvt (Chauffeur) 1 Set Regimental Aid Station Equipment

All men are carried in organic transportation.

1st BATTALION MEDICAL SECTION

Truck, ½-ton, 4 x 4, pickup	Truck, ½-ton, 4 x 4, pickup
1 Capt MC (Bn Surgeon)	1 Sergeant
1 Pvt (Medical Technician)	1 Pvt (Chauffeur) (1)
1 Pvt (Surgical Technician)	1 Set Battalion Aid Station Equipment
2 Pvts (Litter Bearers)	
1 Pvt (Chauffeur)	

2d and 3d BATTALION MEDICAL SECTIONS Same as 1st Bn.

NOTES

(1) No chauffeur is provided for these vehicles by Tables of Organization (January 1, 1939). In many units litter bearers have been trained and function as the extra drivers.

Peace strength 1 officer and 20 men.

1 officer and 7 men are carried in organic transportation.

8 company aid men walk or ride with their companies. Extra men can usually be crowded into any available space.

Rolls and individual equipment are carried in the same truck that carries the men, except for the company aid men whose rolls are carried in the infantry company trailers.

The allotted transportation is sufficient to carry all personnel and equipment—when used exclusively for the Medical Detachment.

One of the unsolved problems is the loading of the kitchen truck and the ¾-ton trailer. The kitchen truck has a capacity of 3000 pounds, the ¾-ton trailer a capacity of 1500 pounds; a total capacity of 4500 pounds. The weight of the equipment that is to be carried by the kitchen truck and trailer varies from 6827 pounds to 8347 pounds, depending upon whether three water cans are filled or whether all water cans are filled. You will note there is a difference in weight of 1520 pounds. Under normal conditions the filled cans are sufficient to permit the mess personnel to prepare one meal and three or four more filled cans will supply water for the unit. But, in case operations are being conducted in a dry area, it may be necessary to carry all water cans filled.

The Table shown in Figure 65 gives the equipment as authorized by the Tables of Basic Allowances. You will note the total weight varies from 3,134.75 to 4,655 pounds.

The weight of the load with only three milk cans filled with water is 3,134.75 pounds; with all nineteen cans filled with water the weight is 4,655 pounds.

It does not include the following items:

a. One 10-gallon gasoline container. When filled this can weighs approximately 100 pounds.

b. Any reserve rations. The six cans of a reserve ration weigh approximately 4 pounds; 188 reserve rations would weigh 752 pounds.

c. Marmite cans. Six one-man cans of about 20 pounds weight are needed or a weight of about 120 pounds.

d. Bedding rolls for 6 officers @ 50 pounds equal 300 pounds.

e. Individual rolls for the 182 men @ 10 pounds equal 1820 pounds.

f. Weight of 4 cooks @ 150 pounds equal 600 pounds. Total weight of items is 3692 pounds.

Experience has shown these items to be a necessary part of the company's equipment. You will note that this equipment weighs 3692 pounds; add this to the weight of the items in the TBA (4,655) and 8,347 pounds is the total. Thus, it is obvious the kitchen truck and trailer can not carry all of the equipment in one load, even if the bulk of the article permitted, which they do not. Shuttling is the only answer.

However, a study conducted at the Infantry School has worked out a method of loading the kitchen truck and trailer under various conditions.

The figures and tables showing the results of this study are self explanatory.

FOR MOBILIZATION

ITEM	Unit Weight	Number To Be Carried	Total Weight Pounds	REMARKS
Kit, repair, gas mask company	0.25	1		Carried in box of cleaning and preserving materials
Axes, handled, chopping, SB, standard grade 4 lb. or 3½ lb. or 4½ lb.	5.25	2	10.50	
Bags, canvas, water, sterilizing, complete with cover and hangers	9.25	2	18.50	
Buckets, general purpose, galvanized, without lip, 24 gauge, 14 qt.	6.75	2	13.50	
Cans, corrugated, nesting, G.I. w/cover				These cans are not available. Cans, G.I., 30 gal., were used instead
10 gallon		1		
16 gallon		1		
24 gallon		1		
33 gallon		1		
Cans, G.I., 30 gal. with cover	35.00	3	105.00	
Cans, milk, 10 gallon			(551.00)	It would be necessary to carry 3 or more of these cans filled to promptly prepare a meal.
Empty	29.00	(19)		
or Filled	109.00	19	2071.00	
Chest, record, company	40.00	1	40.00	19¾" x 19½" x 10½"
Desk, field, small, company as issued	23.00			
With company records	50.00	1	50.00	
Flag, guidon (bunting) complete	3.50	1	3.50	
Fly, tent, wall, large, 21' 6" x 14' 3" (extra) complete w/poles and pins	110.00	1	110.00	
Lanterns, kerosene, Army, or combination candle and kerosene burner (until exhausted)	2.50	3		Carried in box of cleaning and preserving meterial

FOR MOBILIZATION—*Continued*

ITEM	Unit Weight	Number To Be Carried	Total Weight Pounds	REMARKS
Marking outfit, stamping, metal, complete	6.00	1		Carried in box of cleaning and preserving material
Outfits, Officers' Mess M-1937	44.00	1	44.00	
Picks, handled, RR, 6-7 lbs.	9.25	2	18.50	
Range, M-1937, 3 unit, with 1 extra burner	750.00	1	750.00	
Tool box for above range	32.00	1	32.00	
Can, gasoline, 5 gal, for above range	19.00	1	19.00	
Screen, latrine, complete with poles and pins	86.00	1	86.00	
Shovels, general purpose D-handled, strap back, round point No. 2	4.75	2	9.50	
Stretcher, shoe	1.25	1		Carried in box of cleaning and preserving material
Tool kit, carpenter's complete with tools	16.00	1	16.00	
Typewriter, non portable, elite type	52.00	1	52.00	22 lbs. without box Box 18" x 12" x 18"
Cleaning and preserving materials	75.00	1	75.00	Box 31½" x 17" x 18" (See Figure 71)
Canisters, service, gasmask	25.00	1	25.00	5% extra carried
194 rations	5.60	194	1086.00	Includes weight of containers (See Figure 70)
Lanterns, electric, boxed	6.25	3	18.75	
Aggregate weight (All water cans filled)			4,655	
(Three water cans filled)			3,134.75	

FIGURE 65.—Equipment for Infantry Rifle Company.

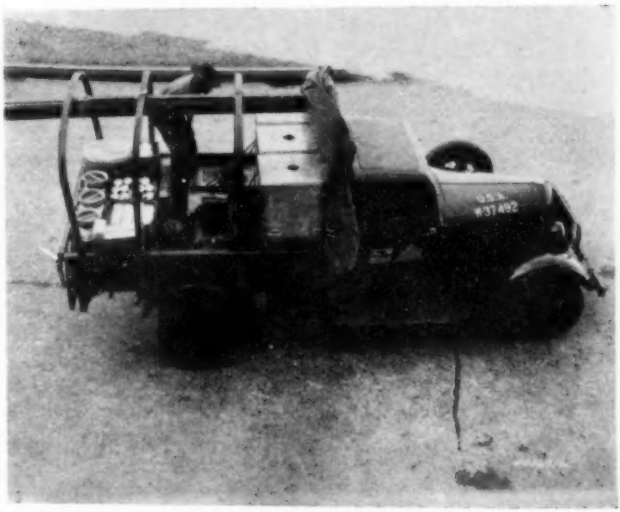


FIGURE 66.—A method of loading the truck and trailer, carrying in the truck only three filled milk cans of water in order to prepare promptly a meal upon arrival at destination or to cook en route: (See Figures 66 and 67). For the ration of a rifle company see Figure 70.

LOADING OF TRUCK, 1½-TON KITCHEN

ITEM	*Weight*
1 Range, M1937	750.00 lbs.
3 Cans, milk, filled	327.00 lbs.
1 Can, G.I.	35.00 lbs.
2 Axes	10.50 lbs.
2 Picks	18.50 lbs.
2 Shovels	9.50 lbs.
3 Lanterns, electric	18.75 lbs.
1 Tool box for range	32.00 lbs.
1 Can, gasoline (for range)	19.00 lbs.
2 Buckets, G.I.	13.50 lbs.
1 Fly, w/poles and pins	110.00 lbs.
Rations (⅓ day)	362.00 lbs.
1 Outfit, Officers' Mess	44.00 lbs.
Weight, less personnel	1749.75 lbs.

In loading the kitchen trucks the tent poles for the kitchen fly must be lashed to the ridge pole of the top bows of the truck because the longest pole extends too far over the tail gate to permit towing the trailer, when carried in any other manner.

The kitchen personnel of the rifle companies consists of a mess sergeant and four cooks. The mess sergeant rides on the front seat of the kitchen truck and the four cooks are perched precariously on top of the kitchen equipment.

FIGURE 67.—Loading of Trailer, ¾-ton.

ITEM	*WEIGHT*
1 Flag, Guidon	3.50 lbs.
2 Cans, G.I.	70.00 lbs.
16 Cans, milk, empty	464.00 lbs.
1 Typewriter, boxed	58.00 lbs.
1 Screen, latrine, complete	86.00 lbs.
2 Bags, water, sterilizing	18.50 lbs.
1 Tool Kit, carpenters	16.00 lbs.
1 Chest record, complete	40.00 lbs.
1 Desk Field, complete	50.00 lbs.
1 Box Canister, gas mask	25.00 lbs.
1 Box, Cleaning and Preserving	75.00 lbs.
Rations (⅔ day)	724.00 lbs.
Weight	1630.00 lbs.

FIGURE 68.—A method of loading the truck and trailer with all milk cans filled with water: (See Figures 68 and 69).

LOADING OF TRUCK, 1½-TON, KITCHEN

Assuming it is necessary to carry all milk cans filled, the load in the truck would consist of all items shown in Figures 66 and 67 for both the truck and trailer except 15 of the milk cans.

This loading of the truck would weigh 3027.75 pounds, without personnel. It would not be possible to cook enroute.

The loads for the kitchen trucks of certain units will be further increased by the necessity of attaching for rations, the three battalion headquarters detachments, the battalion sections of the communication platoon and the battalion sections of the medical detachment.

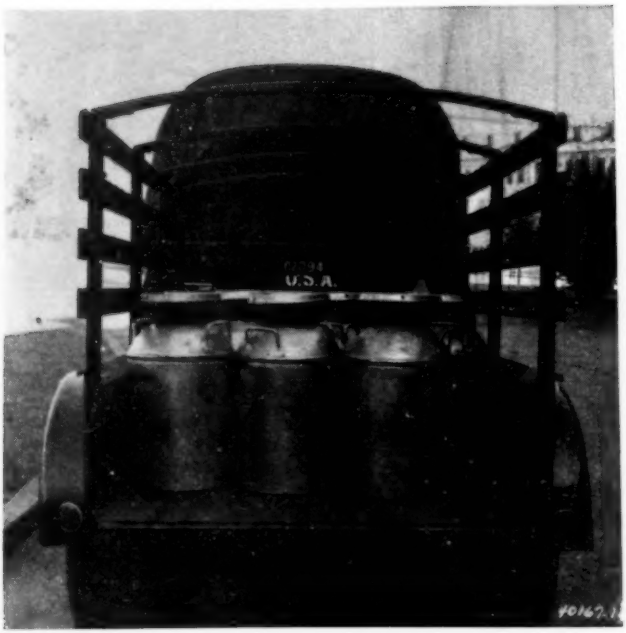


FIGURE 69.—Loading of Trailer, ¾-ton.

15 milk cans, filled (109 pounds each) would make a load of 1635 pounds for the trailer.

A sample ration might be as follows:

Breakfast	Components	Weight
Fresh apples	194 Apples	57
Fried bacon	40 lbs. Bacon	40
Fried eggs	31 doz. Eggs	83
Boiled grits	11 pkgs. Grits, 1½-lb. pkg.	16.5
Bread, butter, jam	172 lbs. Bread, issue	172
Coffee, sugar, milk	18 lbs. Butter	18
	2 cans Jam, No. 10 can	16
Dinner	24 lbs. Coffee	24
	50 lbs. Sugar	50
Roast beef	18 cans Milk, 14 oz. can	16
Brown gravy	78 lbs. Beef, round	78
Mashed potatoes	10 lbs. Flour, issue	10
Green peas	9 lbs. Lard, issue	9
Bread, Apple butter	87 lbs. Potatoes	87
Hot tea	65 cans Peas, No. 2 can	68
	2 cans Apple butter No. 10 can	15
Supper	½ lb. Tea	.5
	65 cans Salmon, No. 1 can	68
Baked salmon	5 lbs. Onions	5
Onion gravy	10 cans Spinach, No. 10 can	65
Boiled spinach	56 cans Corn, No. 2 can	58
Creamed corn	44 heads of Lettuce	48
Lettuce salad	1 gal. Mayonaise	12
Canned pineapple	7 cans Pineapple, No. 10 can	53
Bread, butter	11 lbs. Salt, issue	11
Coffee, sugar, milk	3 lbs. Pepper, black	3
	Total weight	1086

(Weight of containers included.)

FIGURE 70.—One ration for a rifle company.

The following articles should be carried in the box of cleaning and preserving materials:

1 Kit, repair, gas mask, company
34 Sets, anti-dim, for gas masks
1 Stretcher, shoe
1 Marking outfit, metal stamping
1 Gallon, kerosene oil
1 Can, Saddle soap
1 Sponge
6 Rolls, toilet paper
8 lbs., soap, issue
3 lbs., soap, scourng
2 Brushes, scrubbing
1 Carton, matches, safety
24 Candles
1 Quart, gun oil
3000 Patches, cleaning
10 Pouches, first aid
1 Box calcium hypochlorite
3 Lanterns, R. R.
1 Quart, neat's-foot oil
1 Box, spare parts, Ordnance

Packed in box: Length 31½", width 17", depth 18", weight 75 lbs.

FIGURE 71.—Spare parts, miscellaneous articles, expendable articles, cleaning and preserving materials packed in chest.

No provision has been made for carrying the officers bedding rolls and the enlisted men's rolls by organic regimental transportation. In many situations it is believed feasible to transport the kitchen equipment, rations and other essential items of equipment on the truck and the trailer to the site of the new train bivouac. The trailer should be detached and the truck should then return to the site of the prior bivouac and make an additional trip for the officer's rolls, enlisted men's rolls and any remaining items of equipment. In some cases it may be possible for the rolls of both officers and men to be transported by the trains of a higher unit.

At times the situation will permit the rolls being carried on the trailer. One method of loading the trailer with these rolls and certain company equipment is shown on Figures 72 and 73.

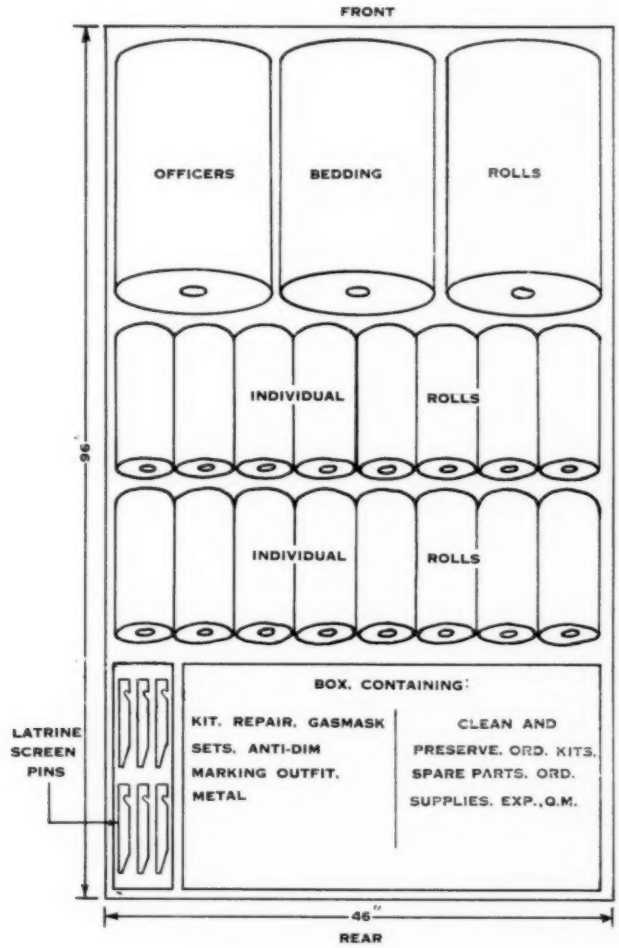


FIGURE 72.—Loading ¾-ton trailer with rolls (Bottom layer).

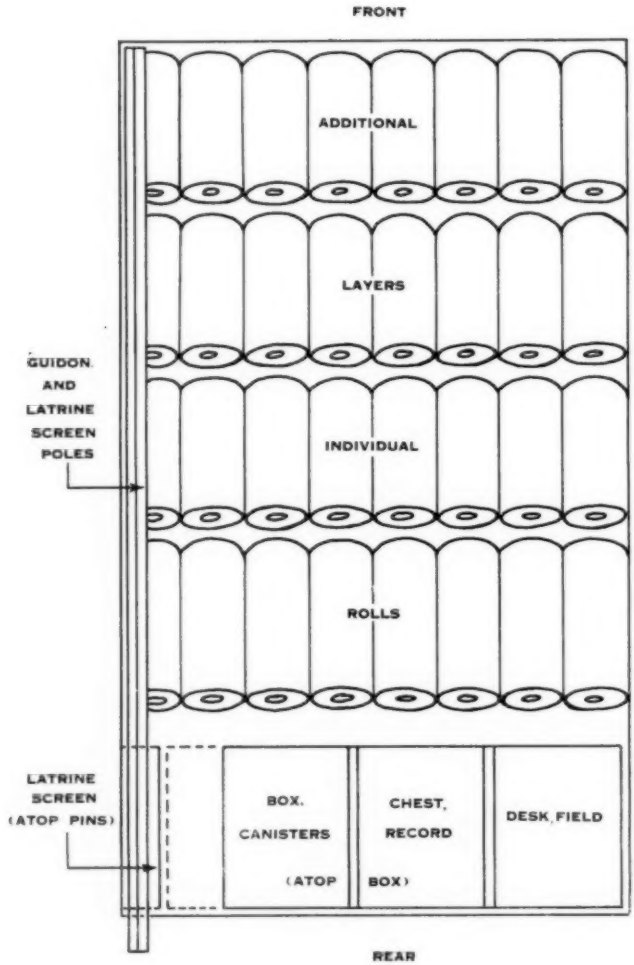


FIGURE 73.—Loading ¾-ton trailer with rolls (Additional layers).

CHAPTER 10

Notes on Infantry

SUPPLY OF GASOLINE AND OIL

With the substitution of motor vehicles for animal-drawn vehicles in the infantry rifle regiment, the problem of supply of gasoline and oil becomes comparable to that of ammunition wherein the predicted expenditure is dependent upon the character of the unit and the operation in which the unit is engaged.

Gasoline expenditure is based upon the miles of travel to be expected by the several types of vehicles in a unit. No one has time to plan the movement of each of the several hundred vehicles of a large unit prior to the execution of a proposed operation. It is possible, however, to determine how many gallons of gasoline are required to move every vehicle of the unit one mile. This is called the unit mile. That amount of gasoline has been determined for units in current Tables of Organization and the *unit mile* has been adopted as a unit of measure in which to express predicted expenditures of gasoline.

Gasoline and oil is shipped from the rear to division railheads, to special gasoline and oil railheads, or to depots established by higher authority. In the case of a division operating on an independent mission, the gasoline and oil requirements are shipped to the division railhead as a part of the unit section of the daily train. Oil usually will arrive in barrels or smaller containers and gasoline in tank cars

of from 6500-10,000 gallon capacity or in ten-gallon containers in box cars. If gasoline arrives in tank cars the quartermaster must refill empty containers in order to make distribution.

In the triangular division unit distribution of gasoline and oil in ten-gallon containers is effected by trucks of the quartermaster battalion. This operation is carried on at the same time distribution of rations is made to regiments by other quartermaster trucks.

When railhead distribution of rations is made, gasoline and oil are issued to regiments at the railhead in the same manner and at the same time as rations. The railhead maintains a reserve of gasoline sufficient for one complete refill for all vehicles of the division.

In making an estimate of requirements of gasoline for a proposed operation the controlling factors, such as the internal travel within the unit, reconnaissance, travel incident to supply movements, and the displacement of the center of mass of the unit must be considered.

The following formula has been adopted to provide an easy method of determining the requirements of gasoline supply for infantry regiments:
In this fomula—

$$UM = 10 + .4SD + MD.$$

UM equals unit miles.

10 is a constant to cover internal travel and reconnaissance.

SD is the supply distance. This is the average of the distance from the railhead, if railhead distribution is employed, or from the train bivouac, if unit distribution is employed, and the ammunition refilling point, to the line of contact with the enemy. Four tenths of the supply distance is taken in the formula for the reason that approximately this proportion of the total vehicles of an infantry regiment will be engaged in supply.

MD is the movement distance. This is the number of miles of probable advance in an attack, or the total number of miles moved in a march.

It has been determined that approximately 16 gallons of gasoline will move all the vehicles of a war strength infantry regiment one mile, and 13 gallons will move all the vehicles of a peace strength regiment one mile. Therefore, if we multiply the result obtained from the application of the above formula (number of unit miles) by the number of gallons required to move the vehicles one mile, the result will be the number of gallons of gasoline required for the projected operation.

Oil requirements are computed at 3% of the gallons of gasoline.

The following five pages illustrate the methods of applying the formula to actual situations.

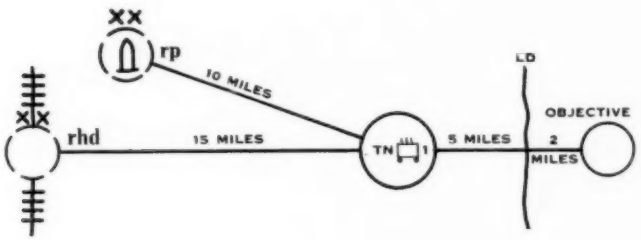


FIGURE 74.—Railhead distribution for an offensive situation (war-strength unit).

Formula

$UM = 10 + .4SD + MD$

$= 10 + .4(5 + 10 + 15) + 2$

$= 10 + .4(17.5) + 2$

$= 10 + 7 + 2$

$= 19$

Gasoline $= 19 \times 16$

$= 304$ gallons

Oil $= 3\%$ (304)

$= 9.1$ gallons

When railhead distribution is employed the unit secures its supplies at the division railhead. In this situation the supply distance (SD) is 5 miles (distance from train bivouac to the line of departure) plus $\frac{10 + 15}{2}$ (average distance from railhead and ammunition distributing point).

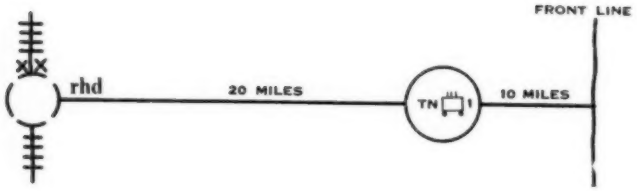


FIGURE 75.—Railhead distribution for a defensive situation (peace-strength unit).

Formula
UM = 10 + .4SD + MD
= 10 + (.4)30 + 0
= 10 + 12
= 22

Gasoline = 22 × 13
= 286 gallons
Oil = 3% (286)
= 8.58 gallons

When railhead distribution is employed the unit secures its supplies from the division railhead. In this case the supply distance (SD) is 30 miles. As no movement beyond the front line is contemplated, the movement distance (MD) factor is omitted.

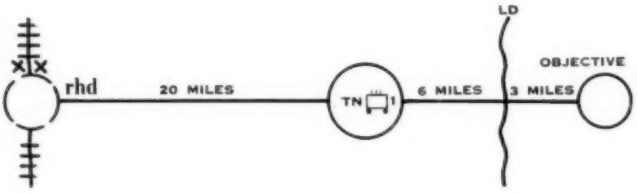


FIGURE 76.—Unit distribution for an offensive situation (war-strength unit).

Formula
UM = 10 + .4SD + MD
= 10 + (.4)6 + 3
= 10 + 2.4 + 3
= 15.4

Gasoline = 15.4 × 16
= 246.4 gallons
Oil = 3% (246.4)
= 7.39 gallons

When unit distribution is employed supplies are delivered to the regiment at the train bivouac. The supply distance (SD) is the six miles between the train bivouac and the line of departure. The movement distance (MD) is the three miles which the unit expects to advance.

FIGURE 77.—Unit distribution for a march (peace-strength unit).

Formula
UM = 10 + MD
= 10 + 15
= 25

Gasoline = 25 × 13
= 325 gallons
Oil = 3% (325)
= 9.75 gallons

In this situation supplies will be delivered at the new bivouac area; therefore, the supply distance (SD) factor is omitted.

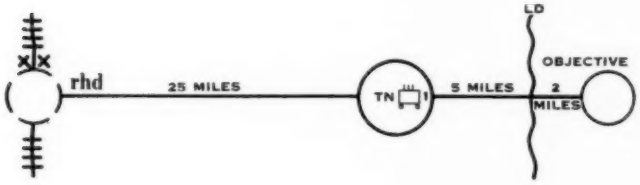


FIGURE 78.—Railhead distribution for an offensive situation (war-strength unit).

Formula
UM = 10 + .4SD + MD
= 10 + (.4)30 + 2
= 10 + 12 + 2
= 24

Gasoline = 24 × 16
= 384 gallons
Oil = 3% (384)
= 11.5 gallons

When railhead distribution is employed the unit receives its supplies from the division railhead. In this situation the supply distance (SD) is 30 miles, and the movement distance is 2 miles.

MODERN INFANTRY SYMBOLS

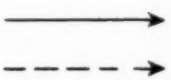
In Volume XIX of The Mailing List there was published a section of the Chapter on *NOTES ON INFANTRY* illustrating the changes that had occured in the special military symbols due to the many recent changes in the organization and weapons of the infantry regiment (rifle). Since the publication of that volume the War Department has published Basic Field Manual, FM 21-30, entitled: "Conventional Signs, Military Symbols, and Abbreviations".

A number of the more important special military symbols frequently used for representing infantry units were changed or standardized by FM 21-30. Herewith is republished a partial list of special military symbols for infantry units. Certain symbols that are necessary to amplify those listed in FM 21-30 agree in principal with the War Department instructions.

WEAPONS

Automatic rifle

(Dotted when emplacement is not occupied) thus



Machine gun

(Arrow to point in principal direction of fire. When used alone it indicates machine-gun, water-cooled, cal. .30)

Sector of fire, heavy machine-gun section

(Shaded portion shows danger space on final protective line.)

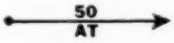
Sector of fire of light machine gun

(Arrows to indicate sector of fire)

Sector of fire of light machine-gun squad (2 guns).

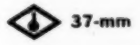
(Arrows to indicate sector of fire.)

Principal direction of fire caliber .50 machine gun (Antitank)

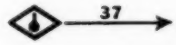


Normal barrage, one machine gun

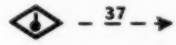
37-mm antitank gun



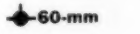
37-mm antitank gun in position. Showing principal direction of fire



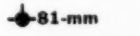
37-mm antitank gun emplacement with principal direction of fire



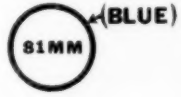
60-mm mortar



81-mm mortar

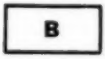


81-mm mortar concentration

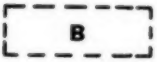


60-mm mortar concentration

Normal barrage, battery 75-mm guns
(Rectangle 100 x 200 yards with letter of battery.)



Emergency barrage, battery 75-mm guns
(Rectangle 100 x 300 yards with letter of battery.)



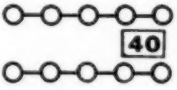
GENERAL

Infantry regimental ammunition distributing point

Infantry distributing point for gasoline and oil only

Area allotted to the 3d Battalion 29th Infantry
Might be an asembly area or bivouac area, as indicated by the situation.

Contact or antitank mines
Arabic figure indicates number of mines in each line.



Two rifle squads or one infantry section

A platoon combat group

A combat group of one section or two squads

Combat area occupied by one squad

INFANTRY UNITS

Infantry Regiment, Rifle
29th Infantry .....

Headquarters Company
29th Infantry .....

Service Company
29th Infantry .....

1st Infantry Train .....

Ammunition Train 1st Infantry .....

Kitchen Train 1st Infantry .....

Observation Post 29th Infantry .....

Point on axis of signal communication 1st Infantry .....

Intelligence Platoon Headquarters Company 29th Infantry .....

Communication Platoon Headquarters Company 29th Infantry .....

Antitank Platoon Headquarters Company 29th Infantry .....

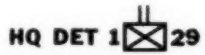
Antitank Section 1st (2d) (3d) 29th Infantry .....

Antitank Squad 1st (2d) (3d) (4th) (5th) (6th) 29th Infantry

Infantry Battalion, Rifle
1st (2d) (3d) Battalion
29th Infantry

Command Post 2d Battalion
29th Infantry

Headquarters Detachment
1st Battalion 1st Infantry



Infantry Company, Rifle
Company A (B) (C) (E) (F) (G) (I) (K) (L) 29th Infantry

Weapons Platoon Company A
29th Infantry

60-mm Mortar Section Company A
29th Infantry

60-mm Mortar Squad 1st (2d)
Company A 29th Infantry

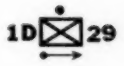
Light Machine Gun Section
Company A 29th Infantry

Light Machine Gun Squad 1st (2d)
Company A 29th Infantry

Heavy Machine Gun Platoon
1st (2d) Company D 29th Infantry

Heavy Machine Gun Section
1st (2d) (3d) (4th) Company D
29th Infantry

Heavy Machine Gun Squad
1st (2d) (3d) (4th) (5th) (6th) (7th) (8th) Company D 29th Infantry .....



Observation Post 81-mm Mortar Platoon Company D 29th Infantry ...

Caliber .50 Machine Gun Platoon Company D 29th Infantry .....

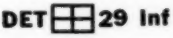
Caliber .50 Machine Gun Squad 1st (2d) Company D 29th Infantry ...

81-mm Mortar Platoon Company D 29th Infantry .....

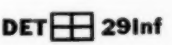
81-mm Mortar Squad 1st (2d) Company D 29th Infantry .....

MEDICAL DETACHMENT

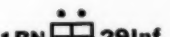
Medical Detachment 29th Infantry .....



Headquarters Medical Detachment 29th Infantry .....



1st Battalion Section Medical Detachment 29th Infantry .....



Aid Station 1st Battalion 29th Infantry .....

TANKS

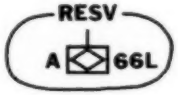
GENERAL

Tank Trap .....

Tank Barrier .....

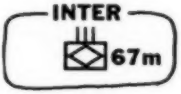
Individual Tank .....

Reservicing Point Company A 66th Infantry (Light Tanks) .....



Point of Deployment 2d Battalion 66th Infantry (Light Tanks) .....

Intermediate Position 67th Infantry (Medium Tanks) .....



Tank Park 66th Infantry (Light Tanks) .....

Command Tank Company A 66th Infantry (Light Tanks) .....

Staff Tank 1st Battalion 67th Infantry (Medium Tanks) .....

Light Tank Regiment, 66th Infantry (Light Tanks) .....

TANK UNITS

Command Post 66th Infantry (Light Tanks) .....

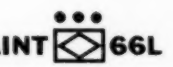
Headquarters Company 66th Infantry (Light Tanks) .....

Staff Platoon Headquarters Company 66th Infantry (Light Tanks) .....

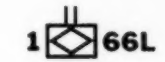
Transportation Platoon, Headquarters Company 66th Infantry (Light Tanks) .....

Maintenance Company 66th Infantry (Light Tanks) .....

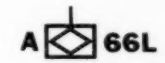
1st (2d) (3d) Platoon Maintenance Company 66th Infantry (Light Tanks) .....



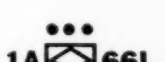
Light Tank Battalion 1st (2d) (3d) Battalion 66th Infantry (Light Tanks) .....



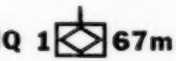
Light Tank Company, Company A 66th Infantry (Light Tanks) .....



Platoon Light Tank Company 1st (2d) (3d) Company A 66th Infantry (Light Tanks) .....

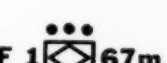


Headquarters Company 1st Battalion 67th Infantry (Medium Tanks) .....



Transportation Platoon Headquarters Company 1st Battalion 67th Infantry (Medium Tanks) .....

Staff Platoon Headquarters Company 1st Battalion 67th Infantry (Medium Tanks) .....



Maintenance Platoon Headquarters Company 1st Battalion 67th Infantry (Medium Tanks) ..... MAINT 1 67m

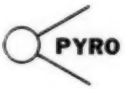
Headquarters Platoon Company E 67th Infantry (Medium Tanks) ..... HQ E 67m

Maintenance Section Company E 67th Infantry (Medium Tanks) ..... MAINT E 67m

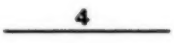
Headquarters Section Company E 67th Infantry (Medium Tanks) ..... HQ E 67m

SIGNALS

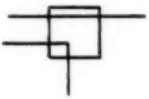
Visual Signaling Post (Pyrotechnics) .....



Symbol for line route map, indicating number of circuits in a wire line .....

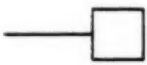


Circuits passing by but not entering a switchboard .....

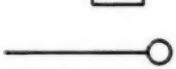


Terminal Frame (Square Figure) .....

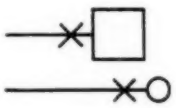
Two-wire circuit terminating in a telephone switchboard .....



Two-wire circuit terminating in a telephone .....



Telephone circuits simplexed for telegraph .....



CHAPTER 11

Infantry Weapons

The following pages illustrate and briefly explain three of the principal weapons of the infantry. The details of the explanation include the essential characteristics of the guns, the organization of the personnel required for their combat operation, their mode of transportation under battlefield conditions, and brief notes on their ammunition supply. The transportation provided for these weapons is that authorized by Tables of Basic Allowances, No. 7, Supplement, War Department, dated October 30, 1939. The supplement dealt with those infantry regiments assigned to the triangular divisions. The loads for the vehicles, as used in this Chapter, are tentative and are those used at The Infantry School for instructional purposes.

THE CALIBER .30 WATER-COOLED MACHINE GUN

The Browning machine gun, caliber .30, M1917, is recoil operated, belt fed, and water cooled. In the recoil operation the rearward force of the expanding powder gas furnishes the operating energy. This energy is controlled by means of various springs, cams, and levers and utilized to perform the necessary mechanical operations of unlocking the breech, extraction and ejection of the empty case, feeding in the new round, as well as cocking, locking, and firing the mechanism.

The barrel is surrounded by a water jacket which holds about 7 pints of water. The water absorbs the heat generated in firing the gun and thus prevents the barrel from becoming overheated.

The feed belt is made of woven fabric with loops and has no metal parts except a brass strap at each end to facilitate loading.

The Browning machine gun is usually mounted on the M1917 A-1 tripod.

GENERAL DATA

Weight of gun and pintle, without water (pounds)	33.50
Weight of gun and pintle, with water (pounds)	40.75
Weight of belt, empty (ounces)	7.5
Weight of belt, filled, 250 rounds in chest	20.50
Length of barrel (inches)	24.00
Sight graduated to (yards)	3,400
Maximum rate of fire (shots per minute)	400-525
Muzzle velocity (theoretical), (feet per second)	2,660
Weight of tripod, M1917 A-1 (pounds)	51.00
Weight of tripod, M1917 (pounds)	52.35

SIGHTS

The front sight consists of the front-sight blade and the front-sight base. The rear sight is adjustable for windage, and drift is offset automatically by the construction of the rear-sight left. The leaf-and-slide assembly provides a mechanical means for making allowance for the force of the wind. It also provides a means for measuring and laying off small angles. The rear-sight leaf is graduated in yards. The windage arc is graduated in mils.

ORGANIZATION AND EQUIPMENT

PEACE STRENGTH PLATOON

The peace strength platoon consists of one officer and thirty-six men. It comprises a headquarters and two sections.

Platoon headquarters consists of:

1. Platoon leader (lieutenant)—commands the platoon.

2. Platoon sergeant—second-in-command and assistant to the platoon leader.

3. Agent and instrument corporal—principal liaison agent to battalion headquarters if in general support of the battalion, or to a rifle company headquarters if directly supporting a rifle company. When the platoon is operating at peace strength he may assist the platoon leader by using the instruments to obtain fire data.

4. Transport corporal—in charge of the transportation.

5. Chauffeur—drives the platoon ½-ton, 4 x 4, command truck.

FIGURE 79.—Caliber .30 water cooled machine gun. No. 1 in the gunner's position, the gun half loaded.

The organization of the platoon is published in Tables of Organization No. 7-10, War Department effective January 1, 1939. The equipment has been prescribed in Tables of Basic Allowances No. 7, dated January 1, 1939. The transportation for the platoon was modified by the supplement to the Tables of Basic Allowances, No. 7, dated October 30, 1939. The transportation for a peace strength platoon

of the infantry regiments assigned to triangular divisions is:

1 truck, ½-ton, 4 x 4, command
4 trucks, ½-ton, 4 x 4, pickup.

COMMAND

The platoon is the normal machine-gun combat unit.

The platoon may be employed as part of the heavy weapons company or it may be attached to another organization.

FIGURE 80.—Caliber .30 machine gun in firing position.

When operating as part of the heavy weapons company the platoon leader receives his orders from the company commander of that company. When the platoon is attached to another organization the platoon leader receives orders from the commander of the unit to which attached.

When the platoon is operating as a unit the platoon leader controls the action of the platoon through the section leaders assisted by such members of platoon headquarters as is necessary.

A section may be detached from the platoon and employed as a separate unit.

SECTION

The caliber .30 machine-gun section consists of a section leader (sergeant) and two machine-gun squads. Each squad consists of a corporal and seven men. The total strength of a machine-gun section is sixteen men (peace strength).

Each squad is equipped with two caliber .30 water-cooled machine guns. One of these guns is for defense only. Each gun has 27 ammunition chests, 4 water chests and other necessary accessories to keep the gun in operation.

WAR STRENGTH

Tables providing for the war strength allowance of transportation have not been published (July 1, 1940).

The following additional personnel is provided for the war-strength platoon:

1. Instrument corporal—for platoon headquarters—in charge of the fire control equipment, assists the platoon leader in obtaining fire data.

2. Two messengers—one usually accompanies the agent corporal; one remains with the platoon leader.

3. One private—chauffeur—is provided for each squad.

CALIBER .30 MACHINE GUN PLATOON

Truck, ½-ton, 4 x 4, comd	1 1st or 2d Lt (Platoon Comdr) 1 Corp (Agent and Instrument) 1 Corp (Transport) 1 Pvt (Chauffeur)

Truck, ½-ton, 4 x 4, pickup	1 Corp (Squad Ldr) 1 Pvt (Gunner) *1 Pvt (Chauffeur)

Article	*Weight*
1 gun with water	92
27 ammunition chests (loaded)	554
27 ammunition chests (empty)	108
1 gun w/o water (defense only)	85
(no ammunition carried for this gun)	
4 water chests (full)	92
1 spare parts chest	21
Total load	952

Truck, ½-ton, 4 x 4, pickup	Same load	Truck, ½-ton, 4 x 4, pickup	Same load	Truck, ½-ton, 4 x 4, pickup	Same load

The following men walk
Platoon Sergeant
The two section leaders (Sergeants)
In each squad
1 Private - Asst Gunner
4 Privates - Ammunition and Water Carriers.

* The squad chauffeurs are not authorized for the peace strength organization.

2d PLATOON SAME AS ABOVE.

THE BROWNING AUTOMATIC RIFLE, MODIFIED

The Browning Automatic Rifle, M-1918 has given reasonably accurate results for many years as a semi-automatic weapon. It has always been mechanically capable of furnishing automatic fire, but this has been very inaccurate.

Over a period of years tests have been conducted by the Infantry Board and the Department of Experiment to build certain modifications into the weapon to overcome its disadvantages. The most important of the modifications have been adopted and are incorporated in the M1918 A2 rifle. These are:

1. A metal bipod has been attached to the rear section of the flash-hider. This is so attached that the rifle can be rotated on the bipod head so that regardless of the ground on which the bipod legs stand, there is no canting. The bipod legs are rigidly locked in a vertical plane for firing. The shoes on the legs of the bipod are rounded to resemble skids and have been set at angles of ninety degrees to the legs.

2. A hinged butt-plate has been provided and attached to the top of the butt-plate. It is short enough to prevent cramping the large muscle at the junction of the neck and shoulder.

3. The cyclic rate can be changed at will from the normal rate of about 600 rounds per minute to a decreased rate of about 350 rounds per minute. This decreased cyclic rate greatly increases the accuracy of automatic fire. It also enables the gun to be fired automatically from the shoulder in the standing position.

4. The cut away forearm gives better cooling properties.

5. The pistol grip affords better control in firing.

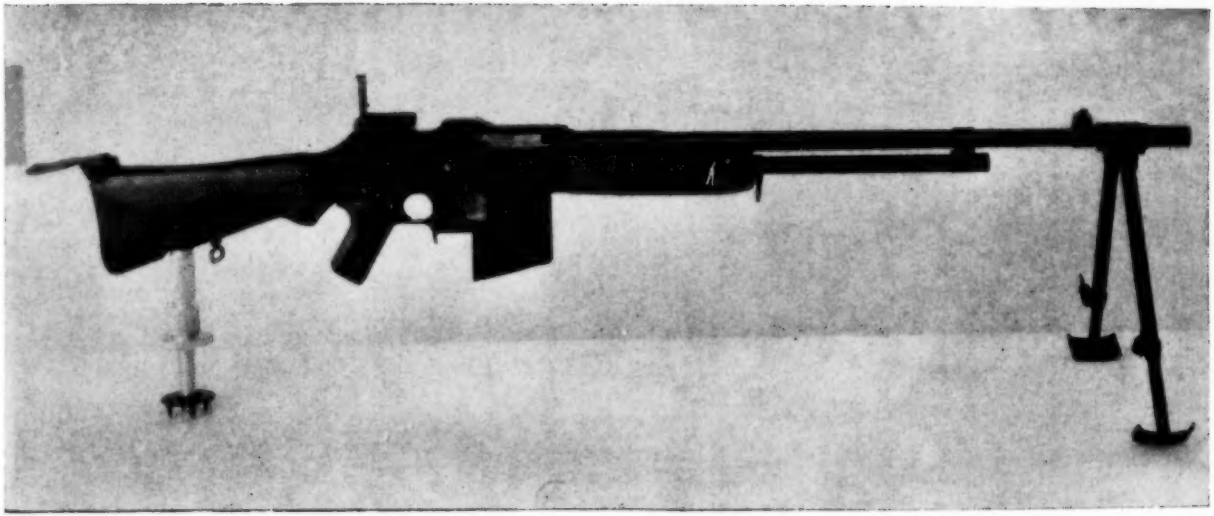


FIGURE 81.—Browning Automatic Rifle, M1918 A2 (Test Model).

6. The modified Browning Automatic Rifle has one additional characteristic that is of outstanding importance. By means of the stock rest it can be laid in the daytime on a final protective line. The elevating screw and clamp on the stock rest allow the gun to be laid and clamped for any desired range. Aiming stakes, or improvised stakes driven

FIGURE 82.—Bipod BAR M1918 A2.

along the side of the barrel can be used to control the direction of fire. Thus the gun can deliver automatic fire along a predetermined line under any conditions of visibility—regardless of fog, smoke, or darkness.

AMMUNITION SUPPLY

According to the Tables of Basic Allowances dated January 1, 1939 the following allowances of ammunition were prescribed:

	On the Individual	On the Battalion Ammunition Vehicle	On Train Higher Unit	Total
Rifle, Browning, Auto, M1918 A1				
In the Rifle Squad	200 (a)	820 (b)	520	1540
In the LMG Squad	240 (c)	900 (d)	600	1740

FIGURE 83.—Advancing the automatic rifle through heavy grass.

(a) 80 carried by the Auto Rifleman and 120 carried by the Asst Auto Rifleman all in magazines.

(b) 300 to be issued prior to combat; 100 to the Auto Rifleman and 80 to the Asst Auto Rifleman in magazines; 120 to the Asst Auto Rifleman in bandoleers. 520 retained in the battalion ammunition vehicle as a reserve.

(c) 80 carried by the Light Machine Gunner, 80 carried by the Asst Light Machine Gunner, and 80 carried by the Ammunition Carrier all in magazines.

(d) 300 to be issued prior to combat; 100 to the Light Machine Gunner, 100 to the Asst Light Machine Gunner, and 100 to the Ammunition Carrier, all in magazines. 600 retained as a reserve.

All of the ammunition provided for the automatic rifle is divided into 12% armor, 81% ball and 7% tracer.

FIGURE 84.—BAR M1918 A2 in firing position.

37-mm ANTITANK GUN

The 37-mm gun M3 is the infantry antitank gun. It is a flat-trajectory weapon of the field-gun type, which fires armor-piercing and high-explosive shells. The armor-piercing ammunition is for use against armored vehicles or concrete emplacements; the high-explosive ammunition is for use against unarmored vehicles, personnel and machine guns. A solid shot is provided for training. Due to its

high muzzle velocity the gun has a very flat trajectory. It is a single shot weapon with a drop type breech block and is mounted on the M4 gun carriage. The carriage has a split trail and is equipped with pneumatic tires. The prime mover for the 37-mm gun is a ½-ton, 4 x 4, truck. The gun is designed for high speed tow behind its prime mover on roads and across country.

GENERAL DATA

Caliber	37-mm
Breech operation	manual ejection and closing
Muzzle velocity f/s	2,600
Maximum elevation on carriage	from plus 15° to minus 10°.
Maximus traverse	60°
Weight in firing position	912 pounds
Trail	split
Tires	pneumatic
Rate of fiire	up to 30 rounds per minute

The gun is fired from wheel segments.

The armor-piercing ammunition provided for the 37-mm antitank gun can pierce 1½-inch armor plate at 1,000 yards with an angle of incidence of 20°, or two feet of reinforced concrete at 1500 yards.

The individual gun is the fire unit. Fire is opened on orders of the gun commander. In exceptional cases, fire may be opened on orders of the section leader. The firepower of each gun being in the hands of only one man, the gunner, fire orders are easily transmitted and control is simple.

The methods used to transport the 37-mm antitank gun are:

1. Towed by the prime mover. This method will be used whenever the situation and terrain permit. Because of the difficulty of cross-country movement by hand, the prime mover should tow the gun to a covered position a short distance in rear of its firing position. The prime mover should be held under cover in the vicinity of the gun position. (Movement by hand as much as 400 yards is slow and difficult.)

2. Drawn by hand. The method will be used for short distances when movement by the prime mover becomes impracticable. The gun crew (corporal and four men) can move the gun for short distances across nearly any type of terrain, except ditches with steep banks.

The gun may be held in one of four stages of readiness for action, as follows:

Mobile.—Limbered to its prime mover, the weapon is highly mobile. It must be unlimbered and placed in position before it can be fired.

Semi-mobile.—The gun is unlimbered, ready to be moved by hand to any position desired.

In a position of readiness.—The gun is kept under cover near its reconnoitered and prepared firing position. It is prepared for firing.

In position.—The gun is prepared to fire instantly.

Normally the 37-mm antitank gun will not be emplaced in a firing position. Emplacing the gun has the following disadvantages:

1. Little cover can be afforded the gun crew. The gun is designed so that it is impossible to dig it in deep enough to protect it and the crew and still fire.
2. Emplacements are large, hence difficult to camouflage.
3. Emplacements restrict the sector of fire.
4. When emplaced, the gun cannot be moved by the gun crew. The prime mover or additional manpower is necessary.

Usually it will be held in a position of readiness near prepared firing positions at a place which affords cover and is defiladed from flat-trajectory fire. It will be moved into the prepared positions when the enemy tank attack is discovered. No fixed distance between the firing position and the position of readiness is prescribed; however, the gun must be in firing position before the enemy tanks come within effective range.

In order to protect the gun and crew from the fire of curved trajectory weapons the gun should be dug in and foxholes prepared for the gun crew. At each firing position foxholes should be prepared for the gun crew. These holes

FIGURE 85.—37-mm antitank gun towed by prime mover.

should be dug so that the gunner and assistant gunner can drop into them for protection and then quickly resume their positions at the gun. Ammunition should be placed below the level of the ground.

The low silhouette of the gun facilitates concealment in high grass, small bushes, and brush. However, the distinctive noise, muzzle blast, and flash tend to disclose its position.

PRINCIPLES OF EMPLOYMENT

Defense against mechanized units is strongly influenced by the nature of the terrain. It is essential that a study of the terrain be made in order to determine the areas that are favorable for the defense against mechanized units and to determine favorable avenues of approach for hostile tanks.

The utilization and improvement of natural barriers and the construction of artificial obstacles are important considerations in any plan for antimechanized defense.

The regimental commander is responsible for the coordination of the antitank protection during both the attack and the defense. Generally, he is the only one who knows the entire tactical situation and, therefore, he should hold the antitank guns under his general control to be employed whenever the situation demands. The following general principles of employment apply to the 37-mm antitank gun in attack or defense.

The primary mission of the 37-mm antitank guns is to deepen and reinforce the antimechanized protection afforded by the caliber .50 machine guns. Actually the task becomes the mobile antimechanized defense of an area. If there is danger of an enemy tank attack the guns should be used *only* for antitank defense. If the danger of hostile tank attack is remote, they may be used on secondary missions. However because of its flat trajectory and the sight used for antitank fire the gun is not suitable for fire against small ground targets.

The 37-mm antitank guns employ direct fire only. Their efficiency is materially reduced during periods of low

visibility. They must be protected by other infantry troops and it may be necessary to detail troops to furnish local protection.

The guns are usually employed by section. The section control, however, is limited to the selection of positions and assignment of missions, which are designated by the platoon leader. It is desirable to locate each gun in a section so that it can protect the other gun with fire. The employment of the guns singly will be exceptional. Such an exception might be the interception of a road or bridge.

A change of position under hostile fire is seldom possible.

POSITIONS

The requirements of a good position for the antitank guns are—

1. Good field of fire. It is desirable for the field of fire to extend up to the effective range of the gun.
2. Commanding ground with a wide sector of fire.
3. Proximity to defilade and concealment for gun and crew.
4. Covered routes of approach for the occupation of the position.

37-mm antitank guns may occupy primary, alternate or supplementary positions. The primary position is initially occupied and is the one from which the mission can best be accomplished. An alternate position should have the same field of fire as the primary position, but it should be located at a sufficient distance from the primary position in order to avoid artillery fire directed at the primary position, this distance should be at least 50 yards.

The limited number of 37-mm antitank guns available for the defense of the regimental area makes it necessary to select supplementary positions. A supplementary position is one from which a mission can be executed that cannot be executed from the primary position. It should be as close to the primary position as the terrain permits.

Alternate and supplementary positions should be selected by the platoon leader, or in his absence by the section

leader. Movement to the alternate position results from an emergency and the leader at the gun decides when the movement is to be made. The movement to the suplementary position is made on orders of the platoon leader.

THE ANTITANK PLATOON (PEACE STRENGTH)

The antitank platoon leader acts upon the orders of the regimental commander or the commander of the regimental headquarters company. The platoon consists of a platoon

FIGURE 86.—Equipment of gun squad, front view.

headquarters and three sections of two squads each, with their transportation and equipment. The personnel of a peace-strength platoon headquarters consists of:

1. The lieutenant (platoon leader), who directs and controls the platoon.
2. The platoon sergeant, who assists the platoon leader.
3. The instrument corporal, who assists the platoon leader in determining ranges.

4. The transport corporal, who is responsible for the platoon transportation and ammunition supply.

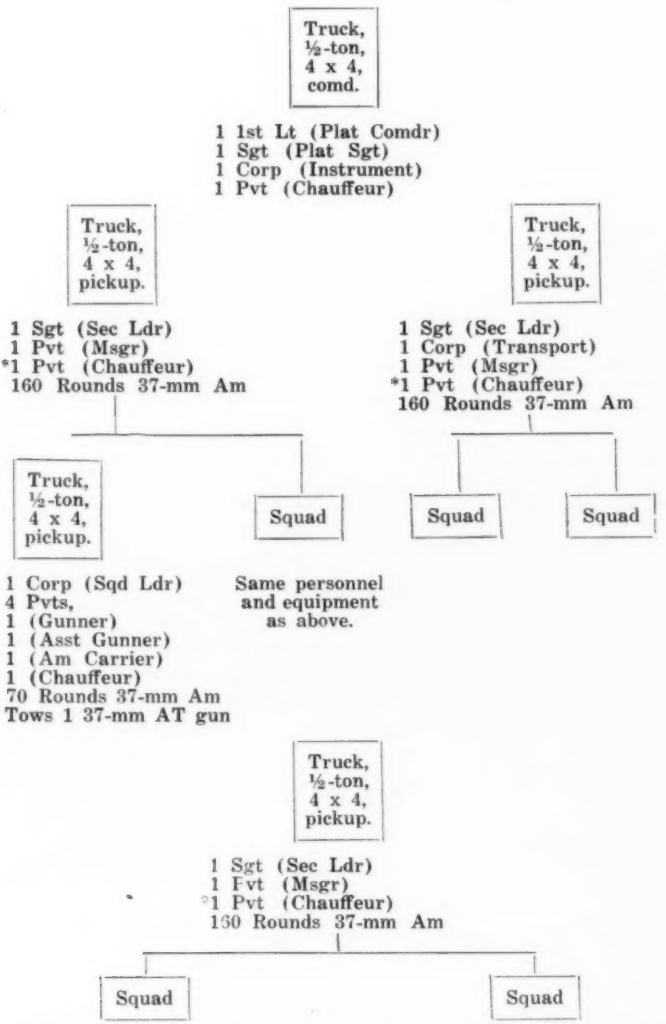
5. One private, who is a chauffeur.

The equipment of the platoon consists of six 37-mm antitankguns and the necessary accessories to keep them in action. All members of the platoon, except the chauffeurs and messengers, are armed with the pistol. The chauffeurs and messengers are armed with the rifle.

FIGURE 87.—Equipment of gun squad, rear view.

The transportation provided the antitank platoon of the peace-strength infantry regiments assigned to tringular divisions consists of one truck, ½-ton, 4 x 4, command and nine trucks, ½-ton, 4 x 4, pickup. This is authorized in the Supplement to Tables of Basic Allowances No. 7, dated October 30, 1939. War-strength allowances of transportation for these regiments have not been published. Based on the carrying capacity of the vehicles one hundred and sixty rounds of ammunition per weapon are carried on the

ANTITANK PLATOON (PEACE STRENGTH)



* The chauffeurs for these vehicles are not provided in T/O. 7-12 effective January 1, 1939.

vehicles of section headquarters and seventy rounds can be carried on the squad trucks. According to the 1939 Tables of Basic Allowances an additional one hundred rounds per gun is carried on the train of the next higher unit. Ninety per cent of the ammunition is armor-piercing and ten per cent is high explosive. The ammunition is carried by hand from the prime mover to the gun position by the squad ammunition carriers.

When ammunition, in addition to that carried on the prime mover and platoon ammunition trucks, is needed the platoon leader is responsible for its supply if the platoon is operating as a unit. He will send the ammunition trucks to the regimental distribution point for refill. If one or more sections are attached to another unit, the commander of that unit is responsible for the supply of extra ammunition.

IN ATTACK

In the attack the platoon may be employed as follows:

1. One or more sections attached to one or more battalions and the remainder of the platoon kept under regimental control.
2. In general support.

In route column the sections of the platoon will usually be distributed throughout the column. One method of distribution would be to place one section with the advance guard, one section with the main body and one section with the trains. Another method is for all three sections to operate as a unit under the platoon leader. When this method is used, the sections will be leapfrogged from terrain line to terrain line on the order of the platoon leader.

In the approach march sections may be attached to one or more of the leading battalions. After the troops leave the assembly areas for the line of departure, the antitank platoon will usually be under the command of the platoon leader. During this period the platoon will be held mobile ready to be moved to any point to meet a mechanized attack.

The regimental order will include instructions for the

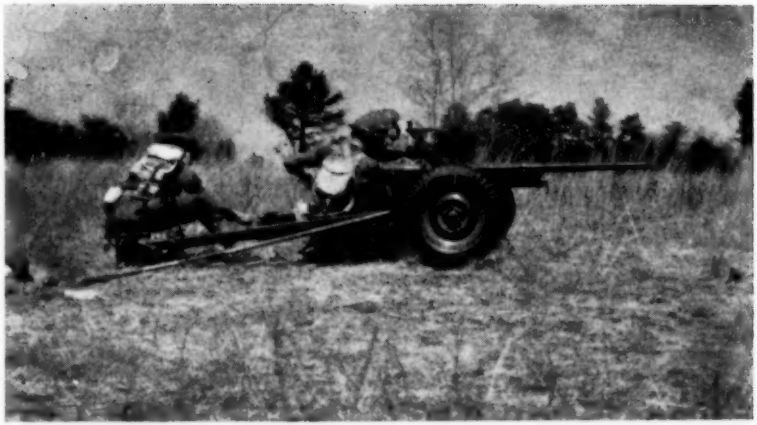


FIGURE 88.—In firing position.

employment of the antitank platoon. This order may direct the regimental headquarters company to furnish the antitank protection or it may direct the antitank platoon to furnish the antitank protection; that is, the order may be given to the platoon leader of the antitank platoon. The latter method will usually be employed.

The regimental order will indicate the assignment for combat; that is, whether or not the platoon will be in general support or a part or all of the platoon attached to one or more of the battalions. If the platoon is in general support, the order will include general locations and missions to include:

1. The protection to be afforded the line of departure or the rear portion of the regimental area.
2. The method of supplying protection during the advance.
3. The protection desired when the attack threatens, or has captured an area vital to the defense. This should include the directions from which hostile counterattacks, supported by tanks, may be expected.
4. The regimental order will prescribe the coordination between the employment of the caliber .50 machine guns and the 37-mm antitank guns.

The platoon leader of the antitank platoon may accompany the regimental commander on his reconnaissance. In any event, prior to the time the platoon leader issues his orders, he should make a reconnaissance covering as many of the following points as time permits:

1. The selection of initial firing positions.
2. The best routes of approach.
3. The location of covered areas for platoon transportation.
4. The location of the front line of the leading battalions.
5. The location and method of employment of the caliber .50 machine-gun platoons of the battalions.

FIGURE 89.—Changing position.

CONDUCT OF THE ATTACK

In the early stages of an attack, the antitank platoon must be prepared to furnish antimechanized defense between the regimental command post and a line about five hundred yards in front of the assault units. In order to accomplish this it will usually be necessary to hold the platoon mobile under regimental control prepared to occupy previously reconnoitered positions.

Firing positions for protection of the front line will usually be on the terrain feature next in rear of the position occupied by the front-line troops. The guns will usually be moved forward by the prime mover, and held in readiness near their reconnoitered position. If the terrain and enemy fire will not permit the prime movers to be used in the forward areas, the guns will be drawn by hand. Movement by hand is slow and if there is difficult terrain to cross, additional personnel will be necessary.

During the progress of the attack personal reconnaissance by the platoon leader should be continuous and should include subsequent firing positions, routes of approach to the subsequent positions, and the location of the front line.

As the attack advances, the antitank platoon must advance to furnish antimechanized protection. If the platoon is operating as a unit the sections may be leapfrogged from one firing position to the next. The method of employment or the width of the zone of action may require the guns of each section to be leapfrogged.

When the attack has captured a terrain feature vital to the defense, the antitank platoon must furnish protection against a possible counterattack. Firing positions should be selected so that the guns can engage a tank attack in front of the forward assault troops, but the most vital consideration is that they be located to protect the flanks. Covered routes of approach to firing positions will be one of the most important considerations in the selection of positions.

IN DEFENSE

In the defense the antitank platoon may be employed by either of the following methods:

1. One or more of the sections may be attached to one or more of the battalions.
2. In general support.

Usually the antitank platoon will be in general support.

The antitank defense must be divided into two coordinated echelons,—the caliber .50 machine guns for the defense of the forward areas and the less mobile antitank platoon to give depth to the regimental defense and to protect the flanks. The 37-mm antitank guns should be placed in position so that their fires will reinforce the fires of the caliber .50 machine guns. They should be able to protect the main line of resistance from enemy antimechanized attacks. However, due to the difficulty of emplacing and concealing the guns in position and the fact that the enemy will make every effort to locate and destroy every antitank weapon before launching a tank attack, these guns should not be placed in the forward areas. Normally they will be employed in the battalion reserve area. Located in this area the guns are better controlled and more easily moved to other threatened areas if under regimental control. Communication and warning signals must be perfected. When employed on favorable terrain in this vicinity their fire will still be effective several hundred yards in front of the main line of resistance.

When suitable targets appear, fire will be rapid and continuous until the hostile tank attack has been stopped or has withdrawn. Thereafter immediate movement to cover in the vicinity of an alternate position is recommended, because once the 37-mm antitank guns are located they will draw enemy fire.

When the regiment conducts a counterattack, part or all of the antitank platoon should be used to protect that force against hostile tank attacks.

FIGURE 90.—Manhandling to firing position.

THE ANTITANK SECTION

The peace-strength antitank section consists of a headquarters and two antitank squads with their transportation and equipment. The section headquarters consists of:

1. The section sergeant, who directs and controls the section.

2. One private, messenger. The messenger may be sent to platoon headquarters, remain with the section leader, or if the section is attached to a battalion, he may be sent to the headquarters of that unit.

The equipment of the section consists of two 37-mm antitank guns and the necessary accessories to keep them in action. The transportation of the section consists of three ½-ton, 4 x 4 trucks, which transport the gun crews, ammunition and accessories and tow the guns.

The section leader acts upon the orders of the platoon leader. An antitank section attached to a unit will be under the command of the officer commanding the unit to which attached.

IN ATTACK

In the attack the antitank section may be—

1. Attached to one of the battalions.

2. In general support.

Normally, the antitank section is under the command of the platoon leader. The platoon leader will usually make the necessary reconnaisssance. When the section is acting alone, the section leader must make a reconnaissance covering the details previously listed.

In the attack the antitank section will usually be employed as a part of the antitank platoon. The platoon leader's orders to the section leader will include instructions as to initial position and missions, and the state of readiness for the guns. The advance to new firing positions will be made upon orders of the platoon leader. In this situation the section leader is responsible for the formation and the arrival of the section at the proper location. Instructions

FIGURE 91.—Firing.

directing the forward movement of a section should include—

1. The probable area of new positions.
2. The state of readiness of the guns in the new position.
3. The route to be followed.
4. Whether or not the prime mover will be used.
5. The time to start the movement.

IN DEFENSE

In the defense the antitank section may be—

1. Attached to one of the battalions.
2. In general support.

The antitank section will usually be employed as a part of the antitank platoon in general support.

THE ANTITANK SQUAD

The peace-strength antitank gun squad consists of a corporal and four privates. The corporal commands the squad; one private is the gunner; one private is the assistant gunner; one private is the ammunition carrier; and one private is the chauffeur.

The equipment of the squad consists of one 37-mm antitank gun, complete, with the accessories necessary to keep it in action, and one ½-ton, 4 x 4, truck, which is used to tow the gun and to transport the gun crew, accessories, and seventy rounds of ammunition.

When the squad is acting as part of the section, the squad leader receives orders and instructions from his section leader. If the squad is attached to another unit the squad leader receives orders and instructions from the commander of that unit.

IN ATTACK

When time permits, the section leader may go with each squad leader to his gun position and assign the exact firing position, the sector of fire and the principal direction of fire. If time does not permit, he may give the squad leaders

a mission, sector of fire, and indicate the locality in which the guns are to be placed and the squad leaders will select the exact positions. The squad will receive its order for forward movement by hand from the section leader.

The squad is given a definite mission, a sector of fire, and a principal direction of fire. The guns remain silent until suitable targets appear within their effective range. The gun is advanced to new locations when antimechanized protection is no longer possible from its present location.

DUTIES OF THE SQUAD DURING COMBAT

Corporal, squad leader.—1. He commands the squad and conducts its movements.

2. When directed by the section leader, he selects the gun position.

3. When the position has not been selected by the platoon or section leader, he determines the exact position the gun is to occupy.

4. He supervises the placing of the gun in firing position.

5. He acts as the squad observer and as such designates the target, issues fire orders, and controls and adjusts the fire of the gun.

6. He keeps the section leader informed as to the status of the ammunition supply.

No. 1, gunner.—1. He replaces the squad leader if the latter becomes a casualty.

2. He aligns the sights of the gun on the target and fires the gun.

No. 2, assistant gunner.—No. 2, assistant gunner, loads the gun and otherwise assists the gunner.

In the peace-strength organization No. 3 is the ammunition carrier. He assist when the gun is being moved and when it is being placed in position.

No. 4 is the chauffeur of the prime mover.

Range cards will be prepared immediately upon occupation of a defensive position. The squad leader is responsible for the preparation of the range cards.

THE ANTITANK PLATOON (WAR STRENGTH)

To the personnel of platoon headquarters there is added:

1. A lieutenant (second-in-command), who is the assistant to the platoon leader.

2. The corporal agent, who may represent the platoon leader at regimental headquarters, or at the headquarters of any unit to which the platoon or a section of the platoon is attached.

3. Three privates, who are chauffeurs. These may drive the three trucks allotted for the three section headquarters in the peace-strength organization.

One additional messenger is provided for the war-strength section headquarters. Usually one of the two messengers will be sent to platoon headquarters while the other one will remain with the section leader. If the section is attached to a battalion, one messenger may be sent to the headquarters of that unit.

One additional ammunition carrier is provided for the war-strength squad. He assists when the gun is being moved and when it is being placed in position.

FIGURE 92.

See you next February.